

930 Computer
932 Computer
9639 Tape Subsystem
9730 Tape/Disk Subsystem
9836 Disk Subsystem
19002 Console

Guide to OPERATIONS

 **CYBER 930**
Computer System

Manual History

Revision Level	Description	PSR Level	System Version	Date
E	Obsoletes all previous editions	716	1.4.1	November 1988

This edition obsoletes all previous editions. Revision E, printed November 1988, reflects NOS/VE Version 1.4.1 at PSR Level 716, and CYBER 930 console software at CIP Level 716.

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About This Book

Who Should Use This Guide

This book is for the operator of a CONTROL DATA® CYBER 930 Computer System. This book assumes that you are using the CYBER 930 as a department-level machine and that you probably do not monitor the machine continuously.

As operator, you perform such routine tasks as starting and shutting down the system, mounting tapes, backing up files, and recovering from problem situations. You also perform administrative tasks such as validating individuals to use the system.

To operate the CYBER 930, you need some experience or training in operating or programming, but you need no prior knowledge of the CYBER 930.

This book gives you enough information to:

- Perform routine procedures
- Deal with common problems
- Gather information for use by maintenance personnel or analysts.

Because you work with CYBER 930 users, you should know generally the kinds of jobs they run on the system.



WARNING

Do not open the doors of the mainframe, tape, or disk cabinets to ensure your safety and the proper functioning of the machine. For more about precautions, see Safe Use and Operation of the CYBER 930 [Control Data publication 60469007].

How to Use This Book

In five chapters, this book describes the CYBER 930 and the tasks you must perform.

Read the first two chapters, Introduction and Using the Console, right away for an overview. Consult the other chapters as you need them. The menus displayed on the monitor of the CYBER 930 console guide you so that you can do many tasks without consulting this book.

For other aspects of computer system operation that are not described in this book, refer to the following publications:

- NOS/VE Operations [Control Data publication 60463914]
- CDCNET Network Operations [Control Data publication 60461520]
- CDCNET Batch Device User Guide [Control Data publication 60463863]

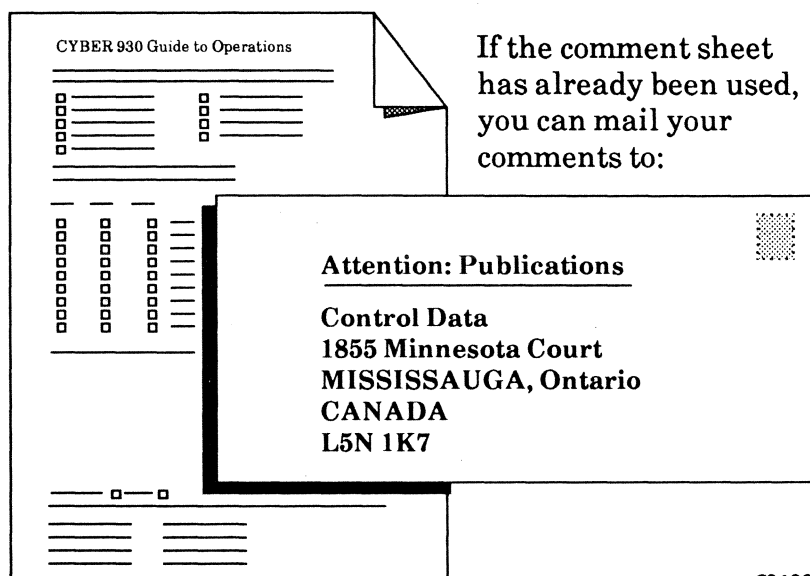
Conventions

This book uses the following conventions to identify keys, commands, and system messages and to explain how to enter certain key sequences.

<Keyname>	Denotes a key from the console keyboard. For example, <Esc> denotes the key marked Esc.
<Key1-Key2>	Two or more keys separated by a hyphen means: hold down the first key while pressing the second (and third) keys. For example, <Alt-F2> means: hold down <Alt> while pressing <F2>.
<Key1> <Key2>	Two or more keys shown side by side means: press and release the keys in succession. For example, <F9> <F9> means: press <F9>, release it, press <F9> again.
UPPERCASE	Command entries, system messages, and items from a display or menu are shown in uppercase characters when used in text.
lowercase	In a command entry or system display that is otherwise shown in all uppercase, lowercase characters represent variable items or some value of your choosing.
<Return>	When you are instructed to enter a command, type the command then press <Return>. When you are instructed to press a key, do not follow that entry with <Return>.
Capitalizing input	The system is not case sensitive. Though this book shows most operator input in uppercase, your input can be either uppercase or lowercase.

How to Submit Comments

The last page of this guide is a comment sheet. Please use it to give us your opinion of the guide's usability, to suggest improvements, and to report technical or typographical errors.



C2199

Please indicate whether you would like a response.

If you have access to SOLVER, the Control Data online facility for reporting problems, you can use it to submit comments about this guide. When entering your comments, use NV0 (N V zero) as the product identifier. Include the name and publication number of this guide.

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St. Paul, Minnesota 55103

Or call (612) 292-2101. If you are a Control Data employee, call (612) 292-2100.

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Control Data's CYBER Software Support maintains a hotline. If you need help not in the documentation, or if you find the product does not perform as described, call us at one of the following numbers. A support analyst will work with you.

From the United States and Canada: (800) 345-9903

From other countries: (612) 851-4131

Disclaimer

This product is intended for use only as described in this publication. Control Data is not responsible for the proper operation of undescribed features, undefined parameters, or customer modifications.

Chapter 1

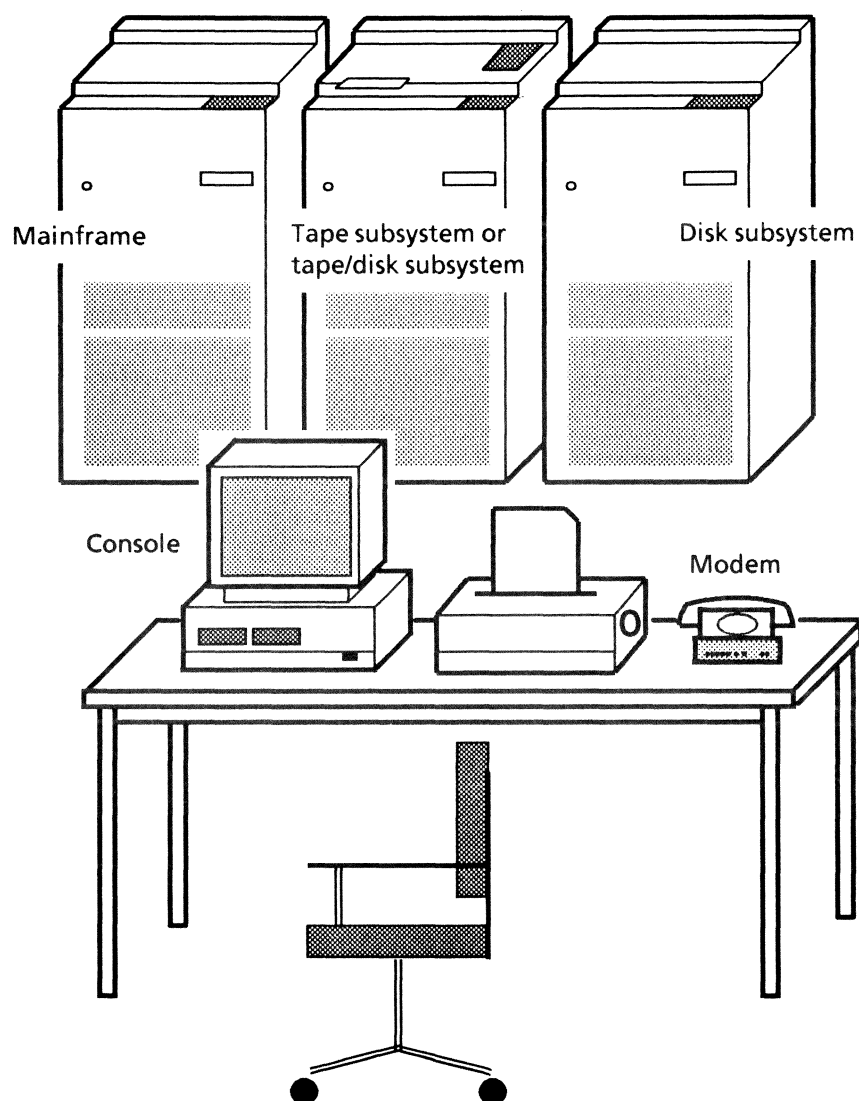
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A Look at the CYBER 930 Computer System

The CYBER 930 Computer System comprises many hardware and software components. This section describes the major hardware and software components that you, the system operator, need to know.

Major Hardware Components of the CYBER 930 Computer System



The Hardware

The CYBER 930 includes the following major hardware components:

- A mainframe
- An operator's console
- Disk cabinet[s]
- Tape cabinet[s]
- Tape/disk cabinet[s]
- Terminals and printers
- A modem

Mainframe

The mainframe houses:

- the central processor
- central memory
- five or ten input/output processors
- six or twelve channels
- the system's power and control unit.

The mainframe cabinet has no switches for normal operator use.

Operator's Console

The operator's console is a microcomputer, which includes a floppy disk drive, a hard disk drive, a color monitor, and a console keyboard.

Disk Cabinet

A disk cabinet houses two or four fixed storage drives. It has no switches for normal operator use.

Tape Cabinet

A tape cabinet contains one tape unit. The cabinet has its own power on/off switch.

Tape/Disk Cabinet

A tape/disk cabinet houses one tape unit and two fixed storage drives. The tape section of the cabinet has its own power on/off switch.

Terminals and Printers

The CYBER 930 accommodates most industry-standard input and output terminal devices. They include printers, plotters, and intelligent interactive terminals such as microcomputer workstations. Input/output devices can be clustered either near the mainframe or at remote locations.

Modem

The modem links the console and the public telephone system. It provides access to the system for remote maintenance by Control Data or for remote console operation.

The Software

The CYBER 930 uses many pieces of software; but, as with the hardware, you interact with the major software components only:

- The operating system for the mainframe
- System startup and maintenance software
- Networking software
- Applications software

Operating System

Network Operating System/Virtual Environment (NOS/VE) is the operating system for the CYBER 930. After system startup, most operator tasks involve NOS/VE.

System Startup

The CYBER Initialization Package (CIP) is the collection of software that controls initialization of system hardware. It controls the startup, power-off, and maintenance functions.

Networking

The Control Data Distributed Communications Network (CDCNET) is a complete networking package. It includes the software and hardware devices that connect terminals, printers, and, optionally, other mainframes to your CYBER 930.

Applications Software

The applications software is special-purpose software such as business management programs and engineering packages.

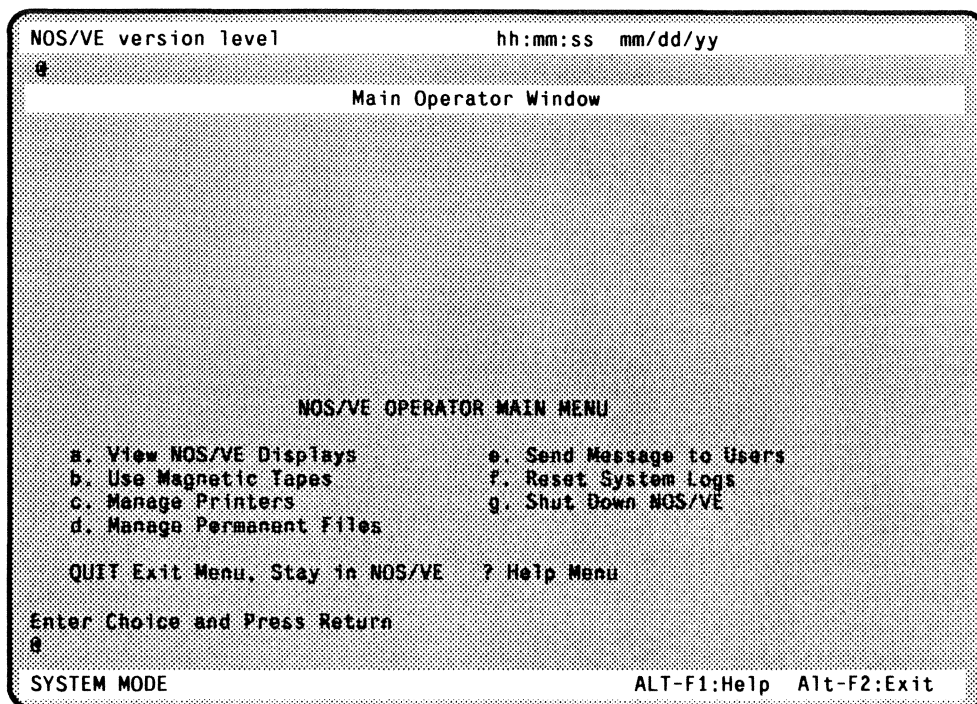
Operator Tasks

As operator of the CYBER 930, your routine tasks are: mounting tapes, turning the system on and off, and maintaining files. These tasks are detailed in chapter 3.

Less frequently, you update system software or collect data for troubleshooting. These and other special procedures are described in chapter 4.

You start most routine tasks from the NOS/VE Operator Main menu. Start other tasks from the Console Main menu.

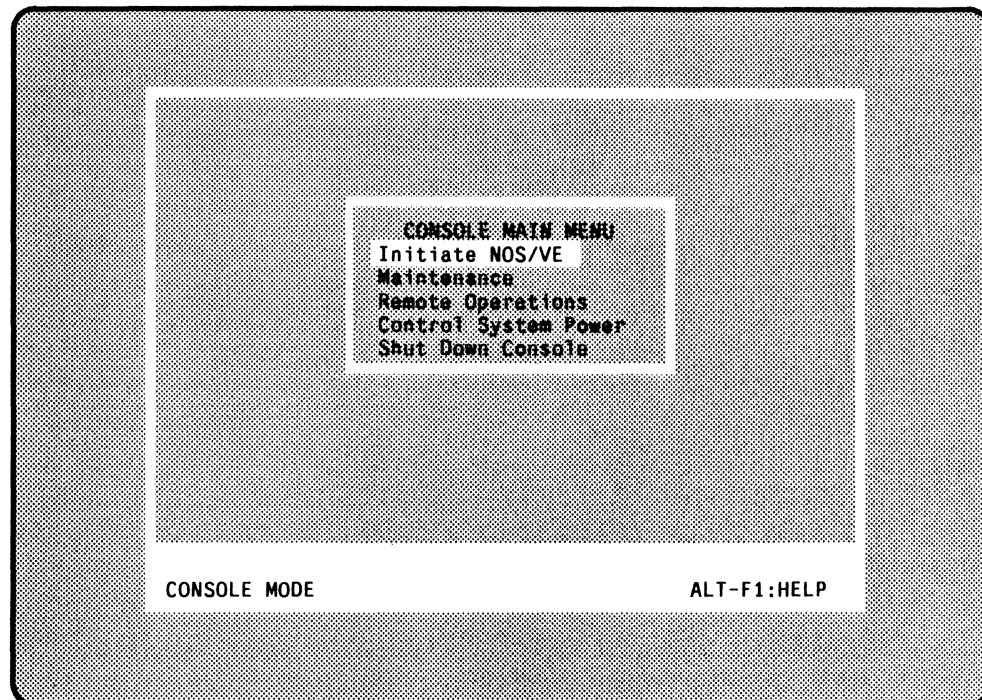
The NOS/VE Operator Menu



This menu lists frequently performed tasks. Some of these tasks run to completion when you select them from the menu. For other tasks, you select several options before the system can complete the task.

The Console Main Menu

When you turn on the console, the system displays the Console Main menu, unless NOS/VE is running.



You use this menu to perform tasks such as system startup and shutdown.

First-Day Activities

Your CYBER 930 arrives with software preinstalled. Control Data customer engineers install the computer system. Once they install and check out the mainframe, they give you control of the system.

At this point, you do several tasks :

1. Configure the software so that you can use the terminals and printers.
2. Create user names and passwords.
3. Back up the system software.
4. Change the operator-access passwords.
5. Record any changes to factory-released device names.

The first three tasks are described in the NOS/VE Software Release Bulletin (SRB) that is supplied with your system. The SRB refers you to other publications that will help you complete system installation.

Change Operator-Access Passwords

The CYBER 930 uses three passwords to prevent unauthorized access to the system:

Local access password	Required to log in to the mainframe from the local console. The system prompts you for the local access password.
Remote access password	Required to log in to the mainframe from a remote console. The system prompts you for the remote access password when the remote link has been established.
Telephone list password	Required to change the console's telephone lists; these lists determine which remote consoles can access the mainframe.

All passwords are factory preset to NULL, which means they provide *no* protection. Change the passwords if you want to enforce a high level of security at your site.

To change the passwords, you need the key disk that accompanies the system. Make sure this disk is accessible only to authorized persons. Changing passwords is described in chapter 4, Special Procedures.

Record Changes to Factory-Released Names

For some tasks, you need the system names for disk units, your print station, printers, the system disk, and tape units. The factory presets these names, but you can change them during installation and configuration. Default names for these devices are:

Element	Default Name(s)
Disk units	DISK00, DISK01, DISK02,...
Print station	AUTOMATIC
Printers	PRINTER1, PRINTER2, PRINTER3,
System disk	DISK00
Tape units	TAPE__label where <i>label</i> is the two-character label that is attached to the lower front of the tape unit.

Ongoing Activities

How often you perform the tasks described in this book depends on how your system is used. You do most tasks on an as-needed basis.

For example, you should clean the tape units after every 8 hours of actual use. Other activities can be done on a daily, weekly, or monthly basis. Routine tasks are described in chapter 3. As a starting point, we suggest the following schedule.

Daily Tasks

- Reset system logs.
- Back up changed files.

Weekly Tasks

- Check available disk space.
- Back up all files.

Monthly Tasks

Archive (back up and delete) files that have not been used for one or two months.

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Using the Console

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Two Modes of Console Operation

You operate the CYBER 930 console in either system or console mode.

- System mode is the production mode. From this mode you monitor jobs running on the system.
- Console mode is for powering the system on and off, and for performing maintenance tasks.

The console always shows its current mode by displaying **SYSTEM MODE** or **CONSOLE MODE** in the lower left of the console screen.

Switching Modes

You switch between modes by pressing **<Alt-F2>**. This does not interrupt system functions that might be in progress.

Online Help

In both modes, the system offers two kinds of help:

- Specific help provides information about a specific menu item or data entry item.
- Global help provides general information about the CYBER 930, such as the use of the special function keys.

Use the following keys when in online help:

<Alt-F1>	Places a help window in the upper right of the screen.
<→> and <←>	Moves the help window anywhere on the screen.
<PgDn> and <PgUp>	Moves through multiple pages of help.
<Esc>	Exits help and closes the help window.

Operating in System Mode

In system mode, you do most of the routine tasks, such as monitoring jobs, managing permanent files, and responding to tape requests.

The Screen in System Mode

In system mode, the screen is divided into windows of information. The number and size of windows depends on which displays you call up and on system prompts that need your attention.

Two windows always appear: the Critical Display window and the Main Operator window. These windows shrink as other windows appear, but they always remain on the screen.

Other system mode windows described in this book are:

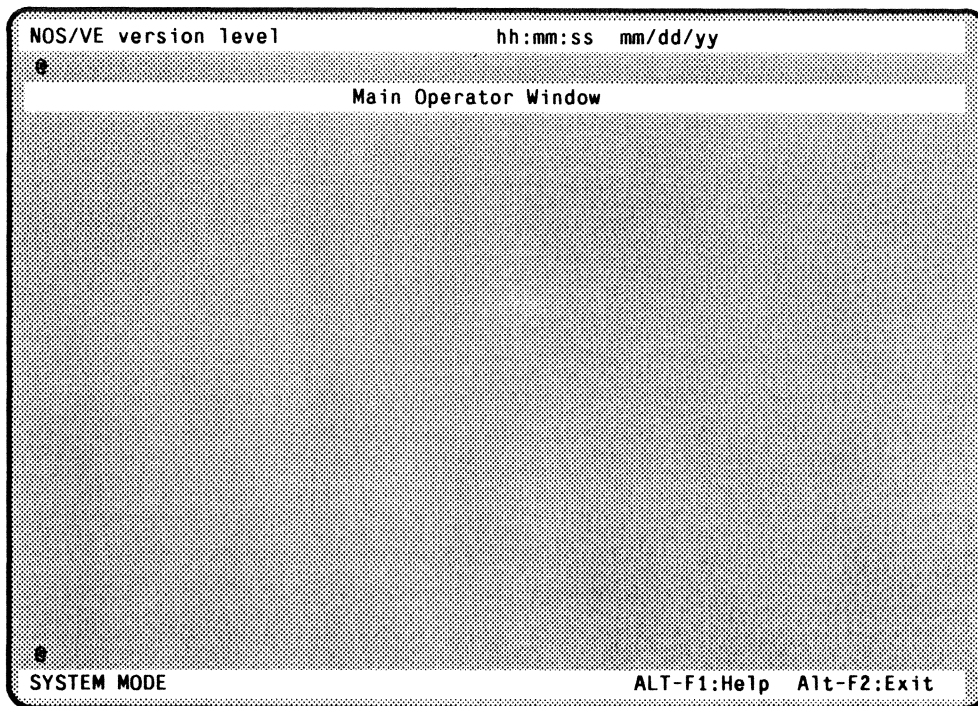
- Operator Action window
- Window A and Window B

Critical Display Window

The Critical Display window is the topmost window on the screen, as shown in the illustration below. Its first line is a system header, showing the operating system level, time, and date. As its name implies, this window has information on critical system malfunctions, which are usually hardware-related failures.

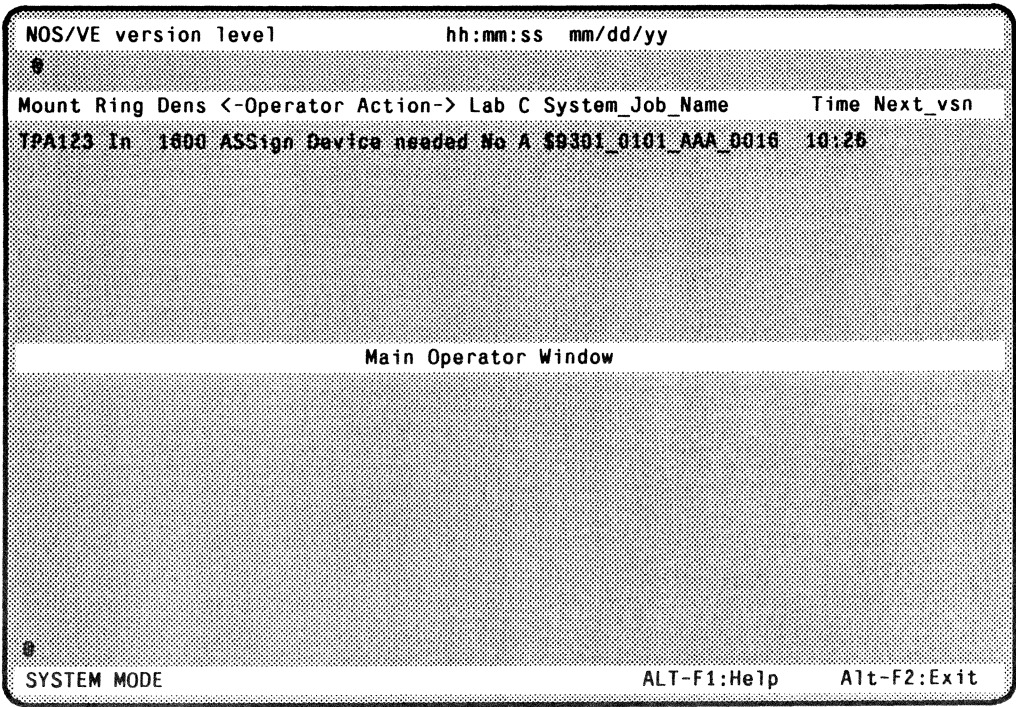
Main Operator Window

You use the Main Operator window most because this is where you enter most operator commands and this is where the NOS/VE operator menu appears.



Operator Action Window

When the system requires you to do an action, the Operator Action window appears on the screen. For example, this window appears when a user job requires the mounting of a tape. When you complete the required action, the system erases the window.



Windows A and B

Window A and Window B display system information that you request with a NOS/VE command entry. You specify Window A or Window B as part of your request.

Windows A and B appear between the Critical Display window and the Main Operator window. The labels A and B do not appear on the screen. Instead, the window shows the name of the display you requested, for example, Job Log display.

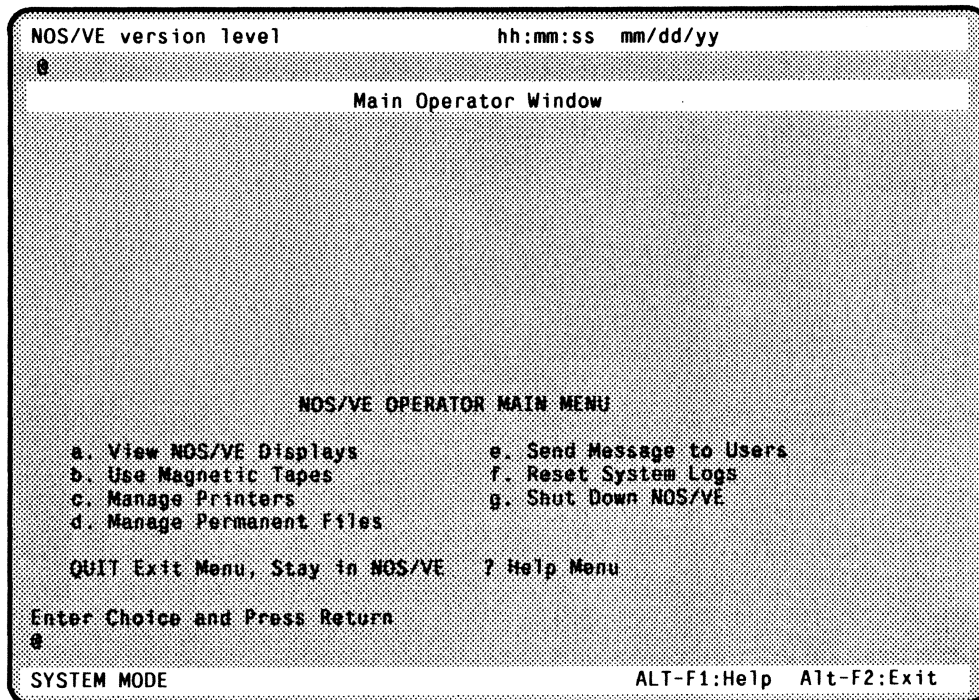
```
NOS/VE version level          hh:mm:ss  mm/dd/yy
@
Job Log Display
16:05:12.034.CI.
16:05:40.253.pr. Task complete NFP$BATCH_TRANSFER FACILITY
16:05:40.254.PR      job time=   0.803 monitor time=   0.141 page fau
lts
16:06:03.658.CI.$system.applications.app$install_release
16:08:49.671.CI.repe $aap_8571
16:11:23.271.CI.
16:11:24.271.CI.
16:11:31.755.CI.resc
16:11:31.841.pr. Task complete IIP$PAUSE UTILITY
16:11:31.842.pr.      job time=   2.940 monitor time=   0.437 page fau
lts=260
16:11:31.926.PR.resume after break
16:11:38.712.CI.
16:11:58.798.CI.
16:12:15.905.CI.ved j1
Main Operator Window
ved j1
/
@
SYSTEM MODE                      ALT-F1:Help  Alt-F2:Exit
```

Information in Window A and Window B is continuously updated.

Entering Data in System Mode

You enter NOS/VE commands from the Main Operator window. You can select commands from the NOS/VE Operator Main menu or type them in. Seldom do you need to make entries from a different window; if this happens, the system provides explicit prompts.

To bring up the NOS/VE Operator Main menu, enter the command `SELECT _OPERATORS _MENU (SELOM)`. The system places the menu in the Main Operator window:



Moving the Cursor to the Input Line

Before you can make an entry in a NOS/VE window, the cursor must be on the window's input line. The cursor is the underscore character; the character @ identifies the input line.

To move the cursor to the input line of a window or to another window, use `<→>`, `<←>`, or `<Tab>`.

Editing Your Input

Except for menu items that you select in console mode, the system does not process keyboard input until you press <Return>. You can edit your input while you key it in, before you press <Return>.

Editing Keys and Their Functions

Key	Function
<Backspace>	Moves the cursor back one space.
<Ctrl-End>	Deletes the current character and all characters to its right.
<→> or <←>	Moves the cursor along the input line without altering characters.

Managing NOS/VE Windows and Displays

As the number of windows on the screen changes, the system adjusts window size and position. Sometimes, the system may not allocate enough space for a window, so that not all information is visible. You can correct this by expanding the window or scrolling information through the display.

Expanding and Shrinking Windows

Move the cursor to the window you want to expand or shrink by using `<→>`, `<←>`, or `<Tab>`. Then use one of the following keys:

Key	Function
<code><F9></code>	Expands the window by six lines.
<code><Shift-F9></code>	Expands the window to its maximum length.
<code><F10></code>	Shrinks the window to its minimum length. Applicable only to the Critical Display Window and the Operator Action Window.
<code><Ctrl ←></code>	Reverses the effect of <code><F9></code> , <code><Shift-F9></code> , and <code><F10></code> .

When you expand a window or open a new window, the system adjusts the size of the other windows, but not the Critical Display window and the Operator Action window. They remain the same size unless you explicitly reduce their size.

Paging Displays

To page a display, move the cursor to the appropriate window using <→>, <←>, or <Tab>. Then use one of the following keys:

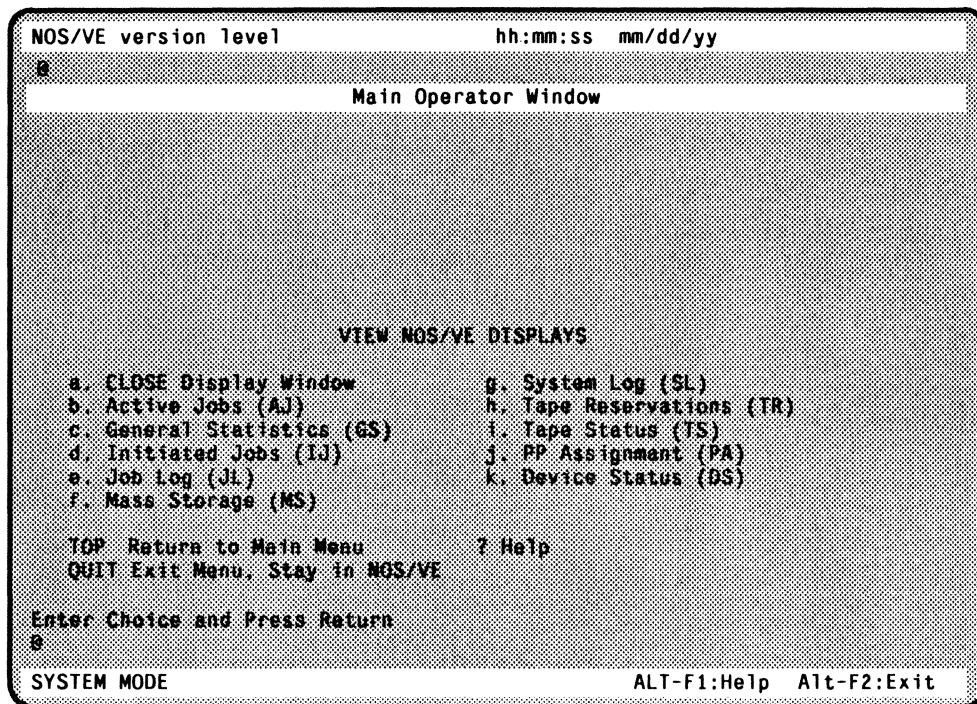
Key	Function
<PgDn>	Moves the display forward a page.
<PgUp>	Moves the display backward a page.
< + >	Takes the current line to the top of the window.
< - >	Takes the current line to the bottom of the window if the display is sufficiently long.
<Ctrl-←>	Resets the display to the first page.

There are three pageable displays: the Active Jobs display, the Initiated Jobs display, and the Device Status display. If you attempt to page other displays, the console bell sounds.

Controlling the Number of Windows

The system controls the number of open windows except for Window A and Window B. Use the NOS/VE Operator Main menu to manage these two windows.

From the NOS/VE Operator Main menu, select View NOS/VE Displays. The screen shown on the opposite page is displayed.



Using this submenu, you can close, open, or overwrite Window A and Window B. When you select a display, you also select a window for that display. If you select a window that is open, the system overwrites the existing display in that window.

Refreshing the Screen

If the screen becomes cluttered, press <Ctrl-Home> to refresh it. If the screen freezes when you press a key, press <Return> to restart the screen.

Changing Screen Color

To change the color of text and window headers, use the following keys:

Key	Function																		
<Alt-3x>	Changes the color of the text on the screen to the color designated by the integer x below:																		
<Alt-4x>	Changes the color of the window headers to the color designated by the integer x below:																		
	<table><tr><th><u>x</u></th><th><u>Color</u></th></tr><tr><td>0</td><td>Black</td></tr><tr><td>1</td><td>Blue</td></tr><tr><td>2</td><td>Green</td></tr><tr><td>3</td><td>Cyan</td></tr><tr><td>4</td><td>Red</td></tr><tr><td>5</td><td>Magenta</td></tr><tr><td>6</td><td>Brown</td></tr><tr><td>7</td><td>Gray</td></tr></table>	<u>x</u>	<u>Color</u>	0	Black	1	Blue	2	Green	3	Cyan	4	Red	5	Magenta	6	Brown	7	Gray
<u>x</u>	<u>Color</u>																		
0	Black																		
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2	Green																		
3	Cyan																		
4	Red																		
5	Magenta																		
6	Brown																		
7	Gray																		

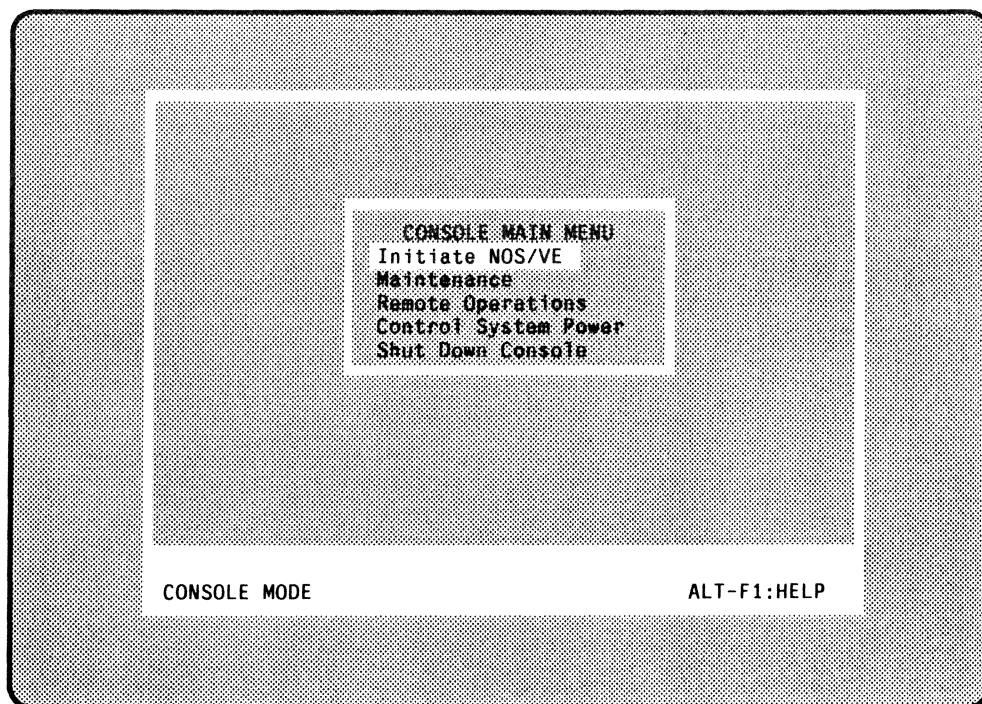
Operating in Console Mode

Though you operate in system mode mainly, you use console mode for tasks that are outside NOS/VE. These include system startup and maintenance-related activities.

The Console Main menu appears when you switch on the console, unless NOS/VE is running. A console mode menu appears when you switch from system mode to console mode by pressing <Alt-F2>.

When operating in console mode, you do two types of actions:

- Select tasks from a menu
- Change items in a parameter display



Selecting a Menu Item

The following table shows how to select an item from a menu, how to return to a previous menu, and how to stop a procedure.

Desired Function	Your Action	Description
Select an item	Method 1: press the highlighted letter Method 2: highlight the entire menu item and press <Return>.	One letter in each item is highlighted, usually the first letter. An inverse video bar marks the current menu item. The space bar, <Backspace>, <→>, or <←> moves the inverse video bar.
Return to a prior menu	Press <Esc> repeatedly	From any menu display, <Esc> calls up the next higher menu until you reach the Console Main menu.
Abort a procedure	Press <Esc>	<Esc> usually aborts a procedure that you started and returns you to the previous display.
Cancel an error message	Press any key	If the system displays an error message and is waiting for an acknowledgment, any key press cancels the error message and tells the system to proceed.

After you select a menu item, the system either completes the selected task without further operator input, or it asks for further information.

When the system asks for input, follow the instructions at the bottom of the display. Usually you must press <Return> to complete your response. For example, if the system asks for a yes or no, shown as (Y/N), press either <Y> or <N> and then <Return>.

If the system detects an invalid keystroke (the console beeps), just enter the correct keystroke.

Changing System Parameters

Data entry displays allow you to change system parameters. A flashing cursor (underscore character) identifies the current data field. Use <←>, <→>, <Tab>, <Return>, <Backspace>, or the space bar to move the cursor.

For most data fields on such displays, you enter a single keystroke to produce a multicharacter response. Valid responses are usually shown. The bottom line shows which function keys to press to get the system to accept or cancel your changes.

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Routine Tasks

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Starting the System

You have successfully started the system when the following conditions are true:

- The console is on.
- Mainframe power is on.
- NOS/VE has completed its startup (deadstart). The message **SYSTEM ACTIVATION COMPLETE** is displayed.

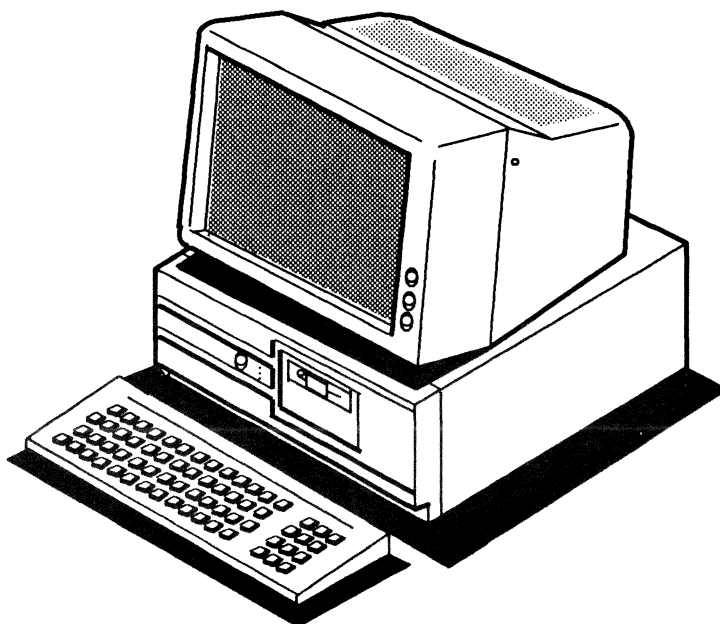
This section describes the three tasks that accomplish the above. However, you seldom do all three separate steps to start the system. For example, your system can be tailored to start automatically when you turn on the console. The procedure to set the system for automatic power on is included in the chapter 4 section, **Setting System Options**.

NOTE

Each tape cabinet and printer has its own power system. You must turn on each one separately. All tape cabinets on the same channel must be turned on before any tape unit on that channel can function.

A label on the lower front portion of a tape cabinet shows the channel connection. The first character of that label identifies the channel. For example, A1 and A2 on two tape cabinets show that the tape units in these cabinets are connected to channel A.

Turning On the Console



To turn on the console and start the system:

1. Set the console power switch to the on position. This switch is usually at the right rear of the console.

If the console is already on, press <Ctrl-Alt-Del> to restart it.

2. Set the monitor power switch to the on position. As the console starts up, the Control Data logo appears briefly on the console screen.

If NOS/VE is running, the system switches to system mode; the Critical Display window and the Main Operator window are displayed.

If NOS/VE is not running but mainframe power is on, the Console Main menu appears on the screen.

If mainframe power is off, the power-on sequence starts automatically.¹ The mainframe power light at the top front of the mainframe cabinet comes on.

3. If the system requests a password, enter the local access password and press <Return>. The system does not request a password if the password value is NULL.

If you do not want to start NOS/VE, press <Esc> after you enter the password, but before the console switches to system mode.

If you enter the wrong password, the system prompts for it again. After three tries, the console keyboard locks. To reset the console, press <Ctrl-Alt-Del> or switch the console off and on.

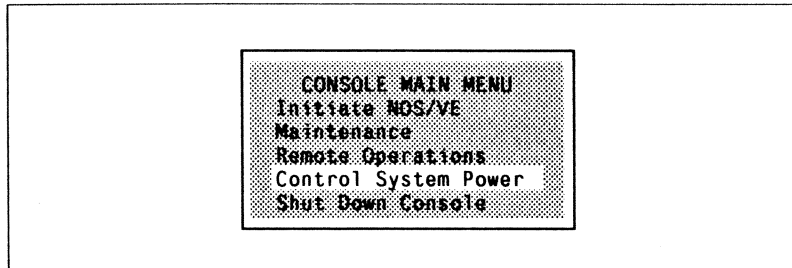
4. If the Console Main menu is on the screen, press <I> to select INITIATE NOS/VE.

System startup is complete when you see the NOS/VE windows and the message:

SYSTEM ACTIVATION COMPLETE

¹ To stop automatic power-on, press <Esc> within two seconds of the appearance of the Control Data logo on the screen.

Turning On Mainframe Power



If your system is not set for automatic power on, manually turn on mainframe power as follows:

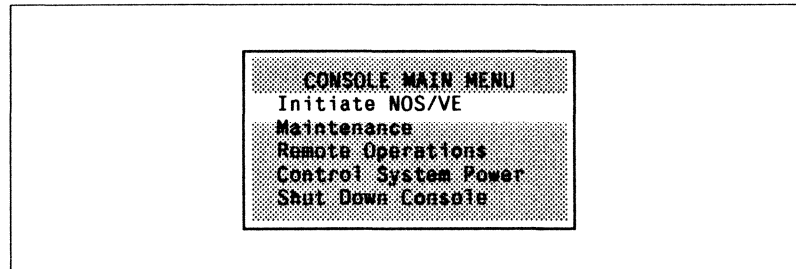
1. From the Console Main menu, press <C> to select Control System Power. The system displays the power status on the screen. If power is on, press <Esc> to return to the Console Main menu.
2. If power is off, press <F10> to start the power-on sequence. The mainframe power light, at the top front of the mainframe cabinet, comes on.
3. If the system requests a password, enter the access password and press <Return>. The system does not request a password if the password value is NULL.

The system completes its power-on sequence and the power status message changes to:

MAINFRAME POWER IS ON

If you enter the wrong password, the system prompts for it again. After three tries, the console keyboard locks. To reset the console, you press <Ctrl-Alt-Del> or switch the console off and on. If you have to restart a remote console, you must also reestablish the remote link.

Starting NOS/VE



Start NOS/VE from the Console Main menu. If this menu is not on the screen, retrieve it in one of two ways:

- If SYSTEM MODE appears in the lower left of the screen, press <Alt-F2>.
- If CONSOLE MODE appears in the lower left of the screen, press <Esc> repeatedly until the Console Main menu appears.

If you are certain that NOS/VE is not running, press <I> to select Initiate NOS/VE. Startup completes within several minutes.

To find out if NOS/VE is running, press <Alt-F2> to return to system mode. If *all* of the following conditions exist, NOS/VE is running.

- You see the NOS/VE windows.
- There is no error message on the system message line (top line of the screen).
- The time shown in the Critical Display window is advancing.

With NOS/VE running and with the console in system mode, enter the following utility and subcommands to lift restrictions on the initiation of new jobs:

```
MANAS
MAS/CHAJC CN = ALL ECI = TRUE
MAS/CHAJC CN = UNASSIGNED ECI = FALSE
MAS/QUIT
```

Shutting Down the System



CAUTION

Do not use the emergency stop switch on the mainframe for a normal shutdown. If you use it, you lose files and system parameters, and a maintenance person must reset the power system.

Shutting down the system consists of three steps:

1. Shutting down NOS/VE.
2. Turning off mainframe power.
3. Turning off the console.

Shutting Down NOS/VE

To shut down NOS/VE:

1. Clear the system of user jobs:
 - a. Enter the following utility and subcommands:

MANAS
MAS/CHAJC CN = ALL ECI = FALSE
MAS/QUIT
 - b. From the NOS/VE Operator Main menu, select Send Message to Users and request that all terminal users log out.
 - c. From the NOS/VE Operator Main menu, select View NOS/VE Displays, then select Initiated Jobs (IJ).

Examine the Initiated Jobs display to determine which jobs to terminate. Do not terminate jobs with class M (maintenance) or class S (system). Column 3 of the display indicates the job class.

NOTE

Some products have jobs that require special shutdown procedures. You can get these procedures from a support analyst, or from the information that accompanies the product.

- d. For each lingering user job, enter the following command to terminate the job:

TERJ N = job

The command TERMINATE _JOB (TERJ) terminates only the job specified with the value job.

Enter the name of the job as shown in the Initiated Jobs display. To abbreviate the name, use the last four digits preceded by a dollar sign. For instance, for the name: \$9301 _0157 _AAB _0998, you can use \$0998.

2. Select Shut Down NOS/VE from the NOS/VE Operator Main menu.

This selection shuts down NOS/VE in such a way that you can readily restart it. When shutdown is complete, the system message line (top line of the screen) displays:

VEOS3500 TERMINATION IS COMPLETE

The Critical Display Window contains the message:

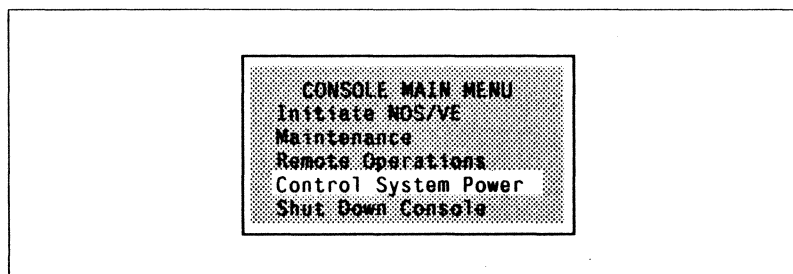
VEOS0002 SYSTEM TERMINATED VIA
OPERATOR COMMAND

Shutting Down the System

Turning Off Mainframe Power

NOTE

Before you start this procedure, and especially if you are at a remote console, make sure you know the local access password, unless it is set to NULL.



1. From the Console Main menu press <C> to select Control System Power. The system displays:

MAINFRAME POWER IS ON

2. Press <F10>. If NOS/VE is running, the system prompts:

Current selection may abort NOS/VE. Proceed?
<Y/N>:

3. If NOS/VE is running, shut down NOS/VE as described earlier. If NOS/VE is not running, press <Y> <Return>.
4. If the system prompts for the local access password, type the password and press <Return>.

If you typed the correct password, the mainframe powers down and the system displays:

MAINFRAME POWER IS OFF

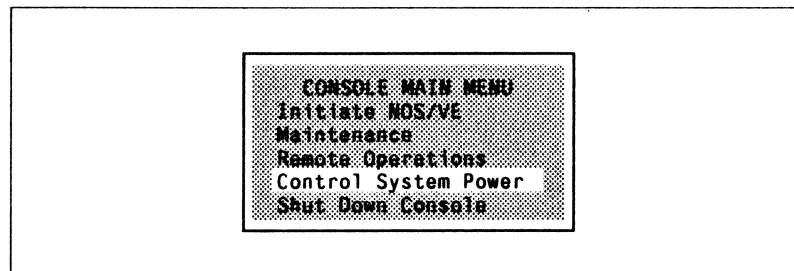
While the system powers down, the keyboard is inactive for about 15 seconds.

If you enter an invalid password, the system again prompts for the password. The system allows you three tries, then it returns to the Console Main menu.

NOTE

The tape cabinets and printers each have their own power systems. Turn them off separately when you power off the mainframe.

Turning Off the Console



To turn off the console:

1. From the Console Main menu, press <S> to select Shut Down Console. This secures the read/write heads of the console's hard disk to prevent data loss from extreme physical shocks.

The system prompts you to continue or abort the operation.

2. Press <Y> to continue.
3. Set the console power switch to the off position.
4. Set the monitor power switch to the off position.

Mainframe power and NOS/VE are not affected. If your console is linked to a remote console, it is disconnected.

Handling Tapes

The procedures in this section are for the tape drive used in the 9639 Tape Subsystem or the 9730 Tape/Disk Subsystem. If you have a different tape drive, refer to the operator's manual for that tape drive. The hardware manuals section of appendix A lists the manuals for other Control Data tape drives.

The following precautions apply to all of the tape-related tasks described in this section.

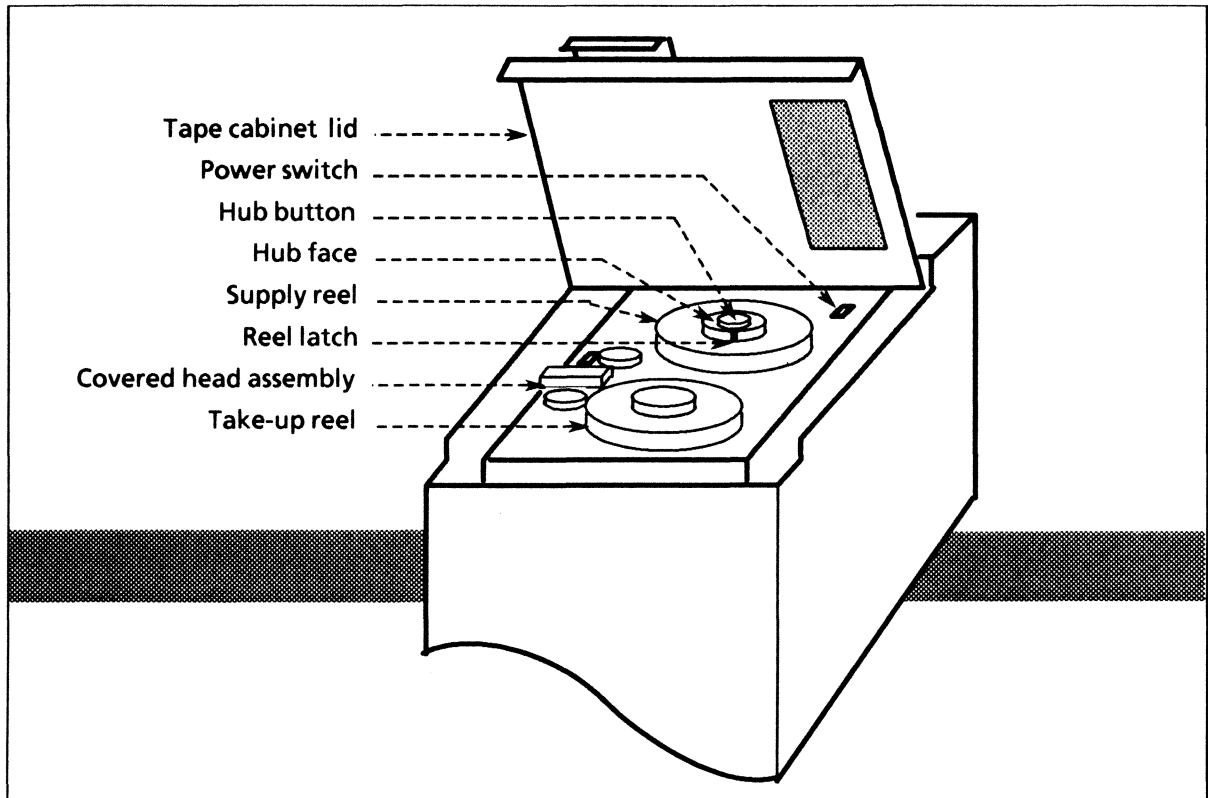
General Precautions

Improper handling or storage can damage tapes or transfer dirt to the tape unit, causing read or write errors. To avoid these risks, observe the following:

- Hold tape reels by the hub. Avoid squeezing or pushing the sides of the reel against the tape edges.
- When you remove a reel from its canister, the tape tends to unwind. Do not let exposed tape touch the floor or any other surface.
- Store the canisters of tape on edge.
- Do not expose tapes to magnetic fields.
- If a tape is stored at abnormal temperature or humidity levels, do not use the tape until it has reached normal room temperature.
- Avoid excessive handling of the tape itself.

Turning Tape Units On or Off

Unlike the disk cabinets, each tape cabinet has its own primary power switch. Turning mainframe power on or off does not affect power to the tape cabinets. You must turn each tape cabinet on and off separately.



Turning On the Tape Unit

1. Set the power switch on each tape unit to the on position. The switch is under the hinged lid at the right rear.

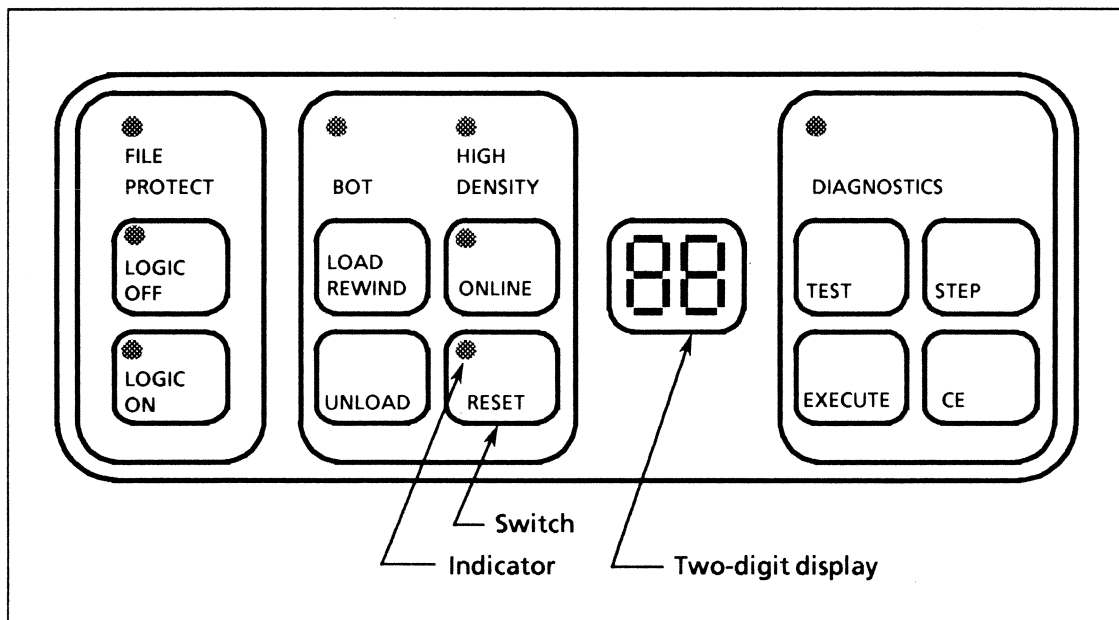
The LOGIC OFF and LOGIC ON indicators flash. The tape subsystem runs a maintenance test and the DIAGNOSTICS indicator flashes. If the test is successful, the FILE PROTECT indicator comes on.

Handling Tapes

2. If a fault code appears, press the RESET and LOGIC OFF switches. The fault code clears.

Press the LOGIC ON switch to repeat the test. If a fault code reappears, use the corrective action table that is under the lid.

Control Panel of a Tape Unit



Turning Off the Tape Unit

To turn off the tape unit, set the power switch to OFF; the switch is under the hinged lid at the right rear.

Mounting and Removing Tapes

Requests for mounting tapes appear in the Operator Action window. Remove a tape only after the job assigned to it releases it.

Finding an Available Tape Unit

To find an available tape unit:

- 1. Select View NOS/VE Displays from the NOS/VE Operator Main menu. NOS/VE then displays the following submenu:

VIEW NOS/VE DISPLAYS	
a. CLOSE Display Window	g. System Log (SL)
b. Active Jobs (AJ)	h. Tape Reservations (TR)
c. General Statistics (GS)	i. Tape Status (TS)
d. Initiated Jobs (IJ)	j. PP Assignment (PA)
e. Job Log (JL)	k. Device Status (DS)
f. Mass Storage (MS)	
TOP Return to Main Menu	? Help
QUIT Exit Menu, Stay in NOS/VE	

- 2. Select Tape Status. The system lists the windows you can choose from for the display.
- 3. Select either Window A or Window B. The Tape Status display appears in the selected window. The example below shows that tape unit TAPE__A2 is available for use.

Tape Status Display

Element	RVS#	EVS#	Ring	Dens	Lab	C	System_Job_Name	Unit	Status
TAPE_A1	AJULY3	AJULY3	In	1600	Yes	A	\$9301_0005_AAA_0010	Ready	
TAPE_A2								Not ready	

Mounting a Tape

1. Find an available tape unit.
2. To write to the tape, insert the write ring in the write ring groove of the tape. To read the tape, remove the write ring from the tape.
3. Open the lid of the tape cabinet.
4. Press the button in the center of the supply reel hub to release the reel latches.
5. If the tape has a protective strap, remove the strap.
6. Mount the tape on the hub so that the write ring groove faces down.
7. Press down on the hub face of the supply reel to latch the reel.
8. Thread the tape leader through the tape path.
9. Loop the tape leader clockwise around the take-up reel. Then turn the reel several times.
10. Close the lid of the cabinet. If the lid is not closed, a mechanical interlock prevents the tape unit from operating.
11. Press the RESET switch, then the LOAD/REWIND switch. The BOT indicator comes on when the tape is rewound. The tape is now loaded.
12. Press the ON LINE switch to make the tape available for use by the system.

Removing a Tape

1. If the tape is not on the supply reel, rewind it. Press **RESET** and then **UNLOAD/REWIND** to rewind the tape. After processing a tape, the system rewinds it onto the supply reel, except for such cases as loading system software from a tape.
2. Open the lid of the tape cabinet.
3. Press the button in the center of the supply reel hub. The hub unlatches and releases the tape reel.
4. Remove the tape.
5. If the reel has a write ring, remove the ring.
6. If the tape has a protective strap, replace the strap.
7. Close the lid of the tape cabinet.

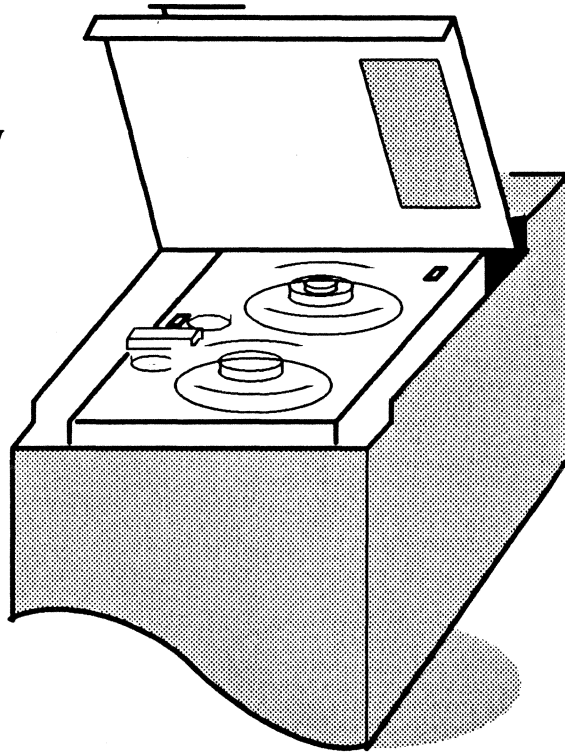
Handling Tapes

Cleaning Tape Units

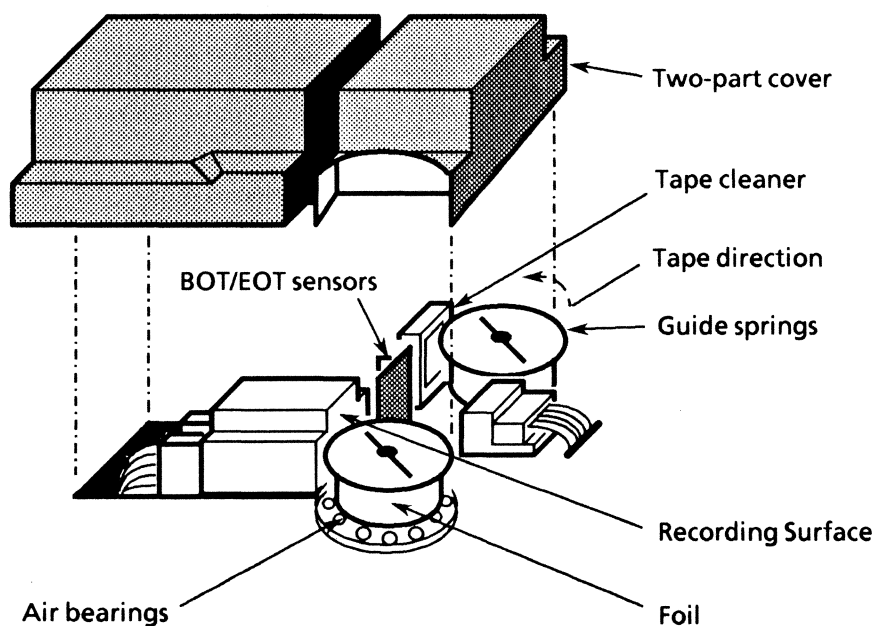
Clean the tape unit regularly to maintain trouble-free performance. Dirt on the tape causes reading and writing problems. Five internal tape unit parts need cleaning every eight hours of use:

- Magnetic head
- BOT/EOT sensor
- Supply reel hub pads
- Tape cleaner
- Air bearings

Clean the external parts less frequently but often enough to prevent dirt buildup.



Parts of the Tape Unit to Clean



Cleaning Materials

To clean your tape unit, you need cleaning materials. We recommend the following Control Data parts, but you can use commercial equivalents:

Cleaning Materials for Tape Units

Item	Part Number
Solvent--use one of three:	
Tape transport cleaner	95961030
Isopropyl alcohol	12210956
Freon TF	12210068
Disposable gloves	95962550
Foam swabs	12218463
Two lint-free cloths	94211400

How to Clean the Tape Unit

1. Lift the two-part cover off the head assembly.



CAUTION

Use the solvent in a ventilated, open area only. Do not inhale its vapor. Wear disposable gloves to avoid skin contact. Read and observe all precautions on the solvent container.

2. Moisten a lint-free cloth with solvent. Do not soak the cloth.
3. Using the moistened cloth, clean the magnetic head. Wipe the recording surface of the head in the same direction that the tape moves across the head.

Handling Tapes

4. Using the moistened cloth, clean the two air bearings including the foil, guide springs, and tape guides.
5. Using the moistened cloth, clean the supply reel hubs.
6. Clean the inside of the two-part cover of the head assembly.
7. Moisten a foam swab with solvent.
8. Using the moistened swab, clean the BOT/EOT sensor and reflective strips.
9. Using the moistened swab, clean the tape cleaner blades.
10. Place the two-part cover on the head assembly.
11. Using the second lint-free cloth, clean the tape deck, lid, and housing as needed.

Responding to Tape Requests

When a user job requests to read or write a magnetic tape, the Operator Action window appears in the middle of the screen with the following tape mount display:

Mount	Ring	Dens	<--Operator Action-->	Lab C	System	Job Name	Time	Next var
PFA001	In	6250		Yes A	\$9301_0101_AAA_0016	13:26:15		

The column titles in the tape mount display have the following meanings:

Mount	Mount the tape with this external volume serial number.
Ring	Place a write ring in the tape (In) or ensure that the tape does not have a write ring (Out).
Dens	The data density of the tape.
Operator Action	Action required to assign the tape to the tape unit. The system automatically assigns labeled tapes and so, normally, no action is needed. In other cases, you must assign the tape. The ASSIGN_DEVICE NEEDED message prompts you to assign the tape.
Lab	The tape is either labeled (Yes) or unlabeled (No).
C	The tape data is either ASCII (A) or EBCDIC (E).
System__ Job__Name	The name of the job requesting the tape.
Time	The time of the tape request.
Next__vsn	The external volume serial number of the next tape when the job requires more than one tape.

To fulfill a tape mount request, you do three actions:

1. Place a write ring in the requested tape, if needed.
2. Mount the tape on any available tape unit with matching density characteristics.
3. Assign the tape to the tape unit if necessary. The system automatically assigns properly labeled tapes.

Identifying Tapes

NOS/VE uses two identifying numbers for tapes:

- The external volume serial number (EVSN) is written on the outside of the tape. It is the number commonly used in tape mount requests.
- The recorded volume serial number (RVSN) is recorded on the tape medium. A tape with a RVSN is called a labelled tape.

If a job requests a tape without specifying the EVSN or RVSN, a menu prompts you for an EVSN. The user who submitted the job must identify for you which tape to use.

Identifying Tape Units

During system installation, all tape units are given an element name. Control Data uses the following scheme for naming for the tape units: TAPE__A1, TAPE__A2, and so on, where A1 and A2 are actual labels appearing on the front of the tape cabinets.

You can also determine the element names for the tape units from the NOS/VE Operator Main menu:

- Select View NOS/VE Displays.
- Select Tape Status from the submenu.

Tape Status Display

Element	RVSN	EVSN	Ring	Dens	Lab	C	System_Job_Name	Unit Status
TAPE_A1	AJULY3	AJULY3	In	1600	Yes	A	\$9301_0005_AAA_0010	Ready
TAPE_A2								Not ready

Assigning Tapes to Tape Units

When a correctly labeled tape (that is, the EVSN matches the RVSN) is mounted on a tape unit, the system automatically assigns the tape to the tape unit.

If a tape is not labeled correctly, the following message appears in the Operator Action column of the Tape Mount Display window:

ASSIGN DEVICE NEEDED

Assign a tape to a tape unit as follows:

1. Select Use Magnetic Tapes from the NOS/VE Operator Main menu. NOS/VE then displays the following submenu:

USE MAGNETIC TAPES	
a. Assign a Tape	b. Label Tape(s)
TOP Return to Main Menu	? Help
QUIT Exit Menu, Stay in NOS/VE	

2. Select Assign a Tape. The system prompts you to enter the following items:

Item	Your Response
External VSN	Enter the external volume serial number of the requested tape, enclosed in apostrophes.
Name of tape unit	Enter the element name of the tape unit on which you mounted the tape.
Job name	Enter the job name only when there are two jobs requesting tapes with the same external VSN. Enter the job names as shown in the Tape Mount Display window. You can abbreviate a name by entering the last four digits preceded by a dollar sign. For example, for the name \$9301 _ 0157 _ AAB _ 0998, you enter \$0998. However, when labeling tapes, enter the last eight characters preceded by a dollar sign. For example, for the name \$9301 _ 0157 _ AAA _ 0000, enter \$AAA _ 0000.

Labeling Tapes

In addition to an external volume serial number for a tape, you can create labels that precede the data on the tape. Such *labeled* tapes have the following labels:

- Volume identifier known as the recorded volume serial number (RVSN)
- Owner identifier
- Expiration date

When you label tapes, you add efficiency and security to your tape processing.

Labeling is the first step in handling a new volume of tape. The process is referred to as initializing the tape.



CAUTION

If a tape already contains data, initializing it rewrites existing labels and erases all other data on the tape.

To label (or initialize) tapes, follow these steps:

1. Select Use Magnetic Tapes from the NOS/VE Operator Main menu. NOS/VE then displays the following:

```

                                USE MAGNETIC TAPES
a. Assign a Tape                      b. Label Tape(s)
TOP Return to Main Menu              ? Help
QUIT Exit Menu, Stay in NOS/VE
```


2. **Select Label Tape(s).** The system requests the following items:

Item	Your Response
Name of tape unit	Enter the element name of the tape unit where you will mount the tape.
VSN list	Enter the VSN or the list of VSNs for the tape(s) you want labeled. The list should have the following format: <pre>('vsn1', 'vsn2', 'vsn3')</pre> If you have only one tape, enter the VSN in this form: <pre>'vsn'</pre> When labelling tapes for a file backup, it is useful to enter ranges in your list. For example, to enter the VSNs from PMON01 through PMON04, from PTUE01 through PTUE04, and from PWED01 through PWED04, you can use the following list: <pre>('PMON01'..'PMON04', 'PTUE01'..'PTUE04', 'PWED01'..'PWED04')</pre>
Tape density	Unless you have reasons for doing otherwise, use 6250 for the tape density. Tapes written at 6250 characters per inch provide for more reliable and efficient processing.

3. **Place write rings in the tapes and mount them as requested by the system.** As the system labels each tape, the system asks you to confirm the VSN you have specified. The request appears in an operator action menu. Move the cursor to that window before responding.

Checking Disk Space

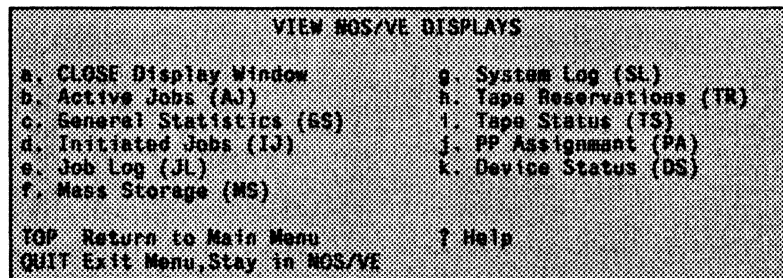
To keep your system running smoothly, make sure that your disks have enough space available for new files. When the available space becomes critically low, NOS/VE warns you with a message in the Critical Display window.

Also, the Mass Storage display appears when a mass storage class is out of space.

To prevent low disk space, periodically check available disk space using the Mass Storage display, and take corrective action when necessary.

Calling the Mass Storage Display

1. Select View NOS/VE Displays from the NOS/VE Operator Main menu to display this submenu:



2. Select Mass Storage. The system lists the windows you can choose from for the display.

Select either Window A or Window B. The Mass Storage display appears in the selected window.

Interpreting the Mass Storage Display

Mass Storage Display

INDEX	VSN	MAT Space	Status	Alloc	DAT Space	Transfer Count
1.	DISK00	xxxxx	normal	true	nnnnn	yy
2.	DISK01	zzzzz	normal	true	aaaaa	cc
3.	DISK02	ddddd	normal	true	iiiii	pp
4.	DISK03	wwwww	normal	true	rrrrr	tt

The following columns of the Mass Storage Display are of particular interest:

VSN The volume serial number (VSN) is the name specified for the disk when it was initialized. Note that DISK00 is the system disk.

Status This column indicates how much disk space is available on the disk.

Normal indicates that at least 10 percent of its capacity is available.

No Space indicates that less than 2 percent is available.

Low Space indicates that between 2 percent and 10 percent is available.

DAT Space This value is a numerical reading of the available space. A reading of 2500 corresponds to the 10-percent threshold and 500, to the 2-percent threshold.

If the available space on a disk is approaching or has fallen below the 10-percent threshold, consider one of the following actions:

- Archive (back up and then delete) old files.
- If the disk is the system disk (DISK00), reset and archive system logs.
- Ask users to delete unneeded files.

To examine the files on a particular disk, enter:

DISAF RVSN = disk

where *disk* is the VSN of the desired disk. To examine all disks, specify ALL for the value disk. The DISAF command sends a listing of the files to the printer.

NOTE

The Mass Storage display automatically appears in Window B when a device class is out of space or when the system adds a Q class mass storage device.

When a device class is out of space, you should:

- Archive files
- Reset and archive system logs
- Ask users to delete unneeded files

Close Window B by selecting Close Display Window. If a device class is still out of space, contact a Control Data service representative.

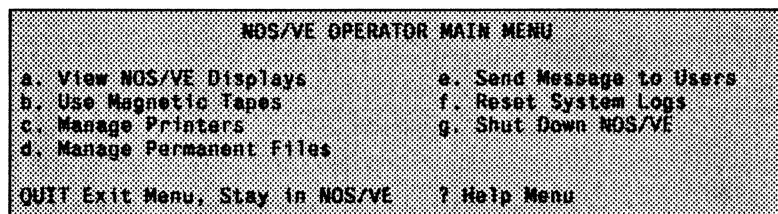
Managing Printers

The following are routine tasks for your printers:

- Examining the print queue
- Stopping and restarting a printer
- Canceling the printing of a file
- Selecting the next file to be printed
- Repositioning a print file
- Identifying listings

For such mechanical tasks as unjamming a printer, changing ribbons, and adding paper, consult the reference manual for your printer.

To perform routine printer tasks, except for identifying listings, select Manage Printers from the NOS/VE Operator Main menu:



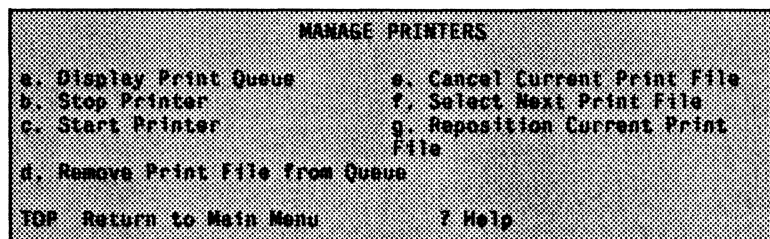
If you have more than one print station or printer, and if you have renamed them, you must identify your print station and printer to do most printer tasks.

If you have one print station and one printer, Control Data has named the print station AUTOMATIC and the printer PRINTER1.

Examining the Print Queue

To see status of the files in the print queue:

1. Select Manage Printers from the NOS/VE Operator Main menu. The system displays the following submenu:



2. Select Display Print Queue. The system requests the name of the print station.
3. Enter the name of the print station. The following items are displayed for each file in the queue:
 - System-supplied file name
 - File length in bytes
 - Current position in the queue
 - Date on which file was queued
 - User-supplied file name
 - Owner

Stopping and Restarting a Printer

Sometimes you need to stop and restart a printer from the operator's console. For example, if you want to change paper size or stock for the next file to be printed. You can stop the printer immediately or after printing the current file. You can also requeue the file, cancel its printing, or resume the printing from the point of interruption.

To stop and restart a printer from the console:

1. Select Manage Printers from the NOS/VE Operator Main menu. The system displays the following submenu:

MANAGE PRINTERS	
a. Display Print Queue	e. Cancel Current Print File
b. Stop Printer	f. Select Next Print File
c. Start Printer	g. Reposition Current Print File
d. Remove Print File from Queue	
TOP Return to Main Menu	? Help

2. Select Stop Printer. The system requests the name of the print station, the name of the printer, and the action you want performed on the current print file. Enter one of the following to specify the action (S is the default):

Value	Action
REQUEUE or R	Requeue the file for printing.
DROP or D	Drop (cancel) the printing of this file.
FINISH or F	Finish printing the file before stopping the printer.
SUSPEND or S	Suspend printing. Resume printing at the same position once the printer is restarted.

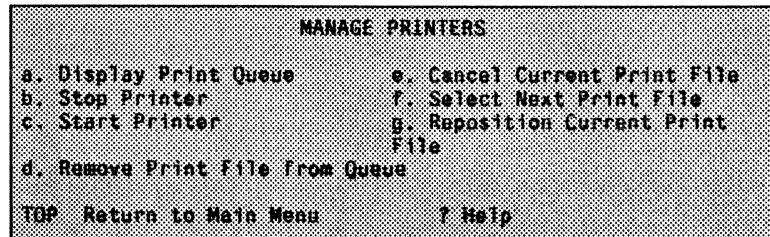
3. When you are ready to restart the printer, select **Start Printer**. The system requests only the names of the print station and the printer.

NOTE

If you use a hardware switch to stop a printer, use the same hardware switch to restart it.

Canceling the Printing of a File

1. Select Manage Printers from the NOS/VE Operator Main menu. The system displays the following submenu:



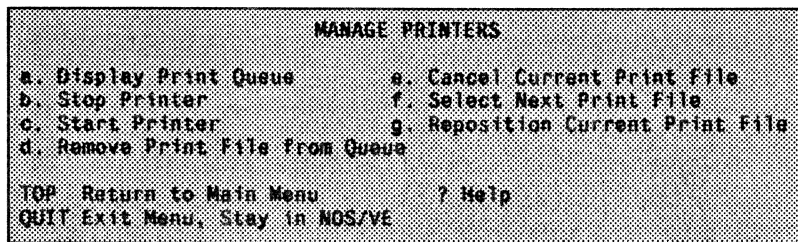
2. To determine the name of the file and whether or not it is already printing, select Display Print Queue. The system requests the name of the print station.
3. Enter the name of the print station. A report on each file in the queue is displayed. If the file is already printing, it does not appear in the print queue.
4. If the file is already printing, select Cancel Current Print File. The system requests the name of the print station, the name of the printer, and whether to requeue or drop the file.
5. If the file is still in the print queue, select Remove Print File from Queue. The system requests the name of the file to remove.

Use the system-supplied name or the user-supplied name. For a system-supplied name, you can use the last four digits preceded by a dollar sign. For example, if the system-supplied name is \$9301_0157__AAB__0125, enter \$0125.

Selecting the Next File to Be Printed

From the Manage Printers menu you can move a file to the head of the print queue, for example, when you want to print a file immediately rather than wait for its turn in the queue:

1. Select Manage Printers from the NOS/VE Operator Main menu. The system displays the following submenu:



2. To determine the name of the file and its current queue position, select Display Print Queue. The system requests the name of the print station.
3. Enter the name of the print station. A report on each file in the queue is displayed. A file that is already printing is not listed in the print queue.
4. Select Select Next Print File. The system requests the name of the print station, the name of the printer, and the name of the file you want to print next.

For the file name, use the system-supplied name or the user-supplied name. For a system-supplied name, enter the last four digits preceded by a dollar sign. For example, if the system-supplied name is \$9301__0157__AAB__0125, enter \$0125.

5. If you do not want to wait for the current file to finish printing, select Cancel Current Print File. The system requests the name of the print station, the name of the printer, and whether to requeue or drop the file.

Repositioning a Print File

From the Manage Printers menu, you can restart printing of a file at any point you specify. You would do this, for example, if a file misprinted because of a defective ribbon or a form feed problem. The sequence of steps would be:

1. Turn off the printer.
2. Correct the printer problem.
3. Reposition the file.
4. Switch on the printer.

To reposition the file after correcting a printer problem:

1. Select Manage Printers from the NOS/VE Operator Main menu. The system then displays the following:

```

                                MANAGE PRINTERS
a. Display Print Queue          e. Cancel Current Print File
b. Stop Printer                 f. Select Next Print File
c. Start Printer                g. Reposition Current Print File
d. Remove Print File from Queue
TDP Return to Main Menu        ? Help
QUIT Exit Menu, Stay in NOS/VE
  
```

2. **Select Reposition Current Print File.** The system requests the station name, the printer name, and the following items:

Item	Description
Reference point	Determines the starting point in the file for the repositioning. You can specify: • BEGINNING or B for the beginning of the file • END or E for the end of the file • LAST LINE PRINTED or LLP for the last line printed. LLP is the default.
Direction	Determines the direction of movement from the reference point. • Enter FORWARD or F to move forward • Enter BACKWARD or B to move backward B is the default.
Unit	Determines the unit of movement. • Enter PAGE or P for a page • Enter LINE or L for a line P is the default.
Number of units	Determines how many lines or pages to be moved. Enter an integer. The default is 1.

If you select Reposition Current Print File while a file is printing, the system stops the printer, repositions the file according to your specifications, and then restarts the printer.

Identifying Listings

NOS/VE generates a banner page for each print file. The banner contains the user name that is associated with the job producing the listing.

Unless you explicitly submit batch jobs under a different user name, NOS/VE associates the user name **\$SYSTEM** with all your console activity. For example, the listings you produce during file backups have the user name **\$SYSTEM**.

Sending Messages to Users

You must sometimes communicate with terminal users from your console, for example to tell users to log out before you back up files or to reply to messages from user jobs. Messages from user jobs appears in the Operator Action Window, and remain on the screen until you reply or until the originating job terminates.

You send messages to users as follows:

1. Select Send Message to Users from the NOS/VE Operator Main menu. The system displays the following submenu:

```
SEND MESSAGE TO USERS
a. Broadcast Message to Users  b. Reply to Message from a Job
TOP Return to Main Menu      ? Help
QUIT Exit Menu, Stay in NOS/VE
```

2. To send a message to all terminal users, select Broadcast Message from Users. The system prompts you to enter a one-line message.
3. To respond to a user job message, select Reply to Message from a Job. The system prompts you to enter your reply and the name of the job requesting the response.

The name of the job appears in the Operator Action Window. Use the system-supplied name or the user-supplied name. For the system-supplied name, enter the last four digits preceded by a dollar sign. For example, if the system-supplied name is \$9301 __ 0157 __ AAB __ 0125, enter \$0125.

Backing up Files

To guard against file loss, back up your NOS/VE disk files at regular intervals by copying them to magnetic tape. Less frequently, you should archive (back up and then delete) inactive files to maintain adequate disk space for new files.

The NOS/VE Operator Main menu provides three backup operations for maintaining copies of all files on the system:

- Archive backup: copies to tape all catalogs and files not modified since a reference date
- Full backup: copies to tape all catalogs and files in the system.
- Partial backup: copies to tape catalogs and files that are modified since a reference date.

The tapes from a full backup plus subsequent partial backups provide a complete record of all files and catalogs current through the date of the last partial backup.

When you perform a partial backup, we suggest that you use the date of the last full backup for the reference date. Further suggestions made in this book about file maintenance assume that you use this strategy.

Determining How Many Tapes You Need

You do not need to know the exact number of tapes required for a backup. The number of tapes required depends on the size of your base. As a backup procedure executes, it requests tape volumes as needed. You only need to have a sufficient number on hand. Unless you have an unusually large file base, four or five tapes should be sufficient for your first backup. After that, you can base your needs on that backup.

To reduce the number of tapes you manage, recycle your backup tapes often. Again, the frequency depends on the importance of your permanent file base and the level of system activity. Unless you have reasons for doing otherwise, recycle the partial backup tapes weekly and the full backup tapes monthly.

Labeling Tapes for Backups

Use labeled tapes for all your backup operations. When you label them, use a labeling scheme that identifies the type of backup to be performed.

The system lets you use up to six characters for volume identifiers, also called volume serial numbers (VSNs). We suggest a scheme similar to the following:

Type of Backup	Suggested Labels
Archive	AJAN01, AJAN02, AJAN03, ... AFEB01, AFEB02, AFEB03, ... AMAR01, AMAR02, AMAR03, ...
Full	FWK101, FWK102, FWK103, ... FWK201, FWK202, FWK203, ... FWK301, FWK302, FWK303, ...
Partial	PMON01, PMON02, PMON03, ... PTUE01, PTUE02, PTUE03, ... PWED01, PWED02, PWED03, ...

In the labeling scheme above, the first character of each label suggests the type of backup. The next three characters indicate which backup in a series of backups (for example WK1 indicates week 1). The last two characters indicate the sequence number for a tape volume in a set of backup tapes.

During the backup it is not convenient for you to label more tapes. For this reason, when you are labeling tapes for your backup operations, label several volumes as extras and have them available for all backups. For example, label several volumes as EXTR01, EXTR02, and so on.

Logging Backups

All backup procedures produce a listing of the files that were processed. The listing shows:

- Names of the files and catalogs processed;
- Date and time of the backup;
- Volume serial numbers (VSNs) of the tapes containing the particular files and catalogs.

Recycle these listings the same way you recycle listings for backup tapes.

Create a log containing the dates of all backups and the VSNs for each backup. You need to refer to this log to selectively reload or recover files.

Clearing the System of Jobs

Back up files when there is little or no activity on the system. Files that are being altered are skipped during the backup. To clear the system of user jobs:

1. Enter the `MANAGE__ACTIVE__SCHEDULING` utility and the following subcommands to prevent the initiation of new jobs. This example assumes that you use the `SYSTEM` job class for backing up and restoring permanent files.

```
MANAS
MAS/CHAJC CN = ALL ECI = FALSE
MAS/CHAJC CN = SYSTEM ECI = TRUE
MAS/QUIT
```

2. From the NOS/VE Operator Main menu, select **Send Message to Users** and request that all terminal users log out.
3. From the NOS/VE Operator Main menu, select **View NOS/VE Displays**, then select **Initiated Jobs (IJ)**.
4. Examine the **Initiated Jobs Display** to determine which jobs to terminate. Do not terminate a maintenance or system job. Column 3 of the display indicates the job class. M denotes a maintenance job and S denotes a system job.
4. Terminate lingering user jobs by entering the following command for each of those jobs:

```
TERJ N = job
```

The command `TERMINATE__JOB (TERJ)` terminates only the job you specify with the value `job`. Enter the name of the job as shown in the **Initiated Jobs Display**. You can abbreviate the name by entering the last four digits preceded by a dollar sign. For example, for `$9301__0157__AAB__0998`, enter `$0998`.

Performing the Backup

To do a backup, follow these steps:

1. From the NOS/VE Operator Main menu, select **Manage Permanent Files**. The system then displays the following submenu:

MANAGE PERMANENT FILES	
a. Partial Backup	d. Catalog Backup
b. Full Backup	e. Restore Catalog
c. Archive Backup	f. Restore Single File
TDP Return to Main Menu	T Help
QUIT Exit Menu, Stay in NOS/VE	

2. Select the backup you want. If you choose a full or partial backup, the system reminds you that the system should be inactive and gives you a chance to abort the procedure.
3. Supply the following items as the system requests them:

Item	Your Response
VSN range	Enter the range of VSNs that identifies this set of backup tapes. To enter the VSNs PMON01, PMON02, PMON03, PMON04, and PMON05, enter the following: 'PMON01'..'PMON05' If you have only one tape, enter the VSN in this form: 'vsn'
Tape density	Enter the density of the backup tapes (6250 or 1600). The default is 6250.

Item	Your Response
Tape type	Enter the type of tape: Labeled or L (recommended) Unlabeled or U The default is L.
Reference date and time	For partial backup, enter a date and time only if you want to change the reference date. For archive backup, enter a reference date. The system archives all files not accessed since this date. Do not specify a time. Use one of several formats. For example, for July 4, 1776 at 11:59 p.m., enter either of the following: M=7 D=4 Y=1776 H=23 M=59 or 7 4 1776 23 59

The Tape Mount Display Window appears prompting you to mount the backup tapes and assign them.

- Place write rings in the tapes and mount them as requested by the system. If the system needs more tapes than you specified, it prompts you to enter an external VSN and mount another tape.
- If you want to terminate NOS/VE after the backup, you do not need to enable user jobs again. The system automatically restores this capability when you restart NOS/VE. If you need to enable user jobs right away, enter the following commands:

```
MANAS
MAS/CHAJC CN = ALL ECI = TRUE
MAS/CHAJC CN = UNASSIGNED ECI = FALSE
MAS/QUIT
```

Reloading Files

Sometimes you are required to reload files from backup tapes to disk, for example, to restore deleted files at a user's request.

When you reload a catalog, the system includes all subordinate files and subcatalogs. For example, to reload all files for user XYZ, you need only to reload catalog XYZ, which is called the master catalog.

Determining the Correct Backup Tapes

To determine the correct backup tapes, you need to know which files or catalogs you want to reload. Examine the backup log and backup listings of each backup set to find the VSNs of the tapes that contain these files.

The backup listing may not be accurate toward the end of a tape volume. If a file or catalog is not on the tape indicated on the backup listing, use the next EVSN on the backup listing.

Reloading Files or Catalogs

When reloading files or catalogs, start with the most recent partial backup tapes and work back to the most recent full backup tapes. The reload is complete after reloading from the full backup tapes.

To restore a file or catalog:

1. From the NOS/VE Operator Main menu select Manage Permanent Files. The system displays the following:

```
MANAGE PERMANENT FILES

a. Partial Backup          d. Catalog Backup
b. Full Backup             e. Restore Catalog
c. Archive Backup          f. Restore Single File

TOP Return to Main Menu    F Help
QUIT Exit Menu, Stay in NOS/VE
```

2. Select Restore Catalog or Restore Single File. The system requests the following items:

Item	Your Response
Path name	Enter the path name of the file or catalog as shown in the backup listings.
Type of backup tapes	Enter one of the following values: ARCHIVE or A FULL or F PARTIAL or P USER_SUPPLIED or US The default is P.
VSN list	Enter the list of VSNs for the backup tapes. The system specifies the set it needs. The list should have the following format: ('vsn1','vsn2','vsn3') If there is only one tape, enter the VSN in this form: 'vsn'
Tape density	Enter the density of the backup tapes (6250 or 1600). The default is 6250.
Tape type	Enter the type of tape: Labeled or L UNLabeled or U The default is L.

The system posts a series of operator action messages requesting that you mount the backup tapes and assign them as needed

3. Mount the tapes as requested by the system.

When all the requested tapes are processed, the reload is complete, unless you started with a set of partial backup tapes. If you processed a partial backup set, the system requests another list of VSNs for the full backup tapes and subsequently asks you to mount them.

Resetting System Logs

NOS/VE charts system activities in the following logs:

Log	Description
Account	Notes all charge-related events.
Engineering	Logs hardware-related messages.
History	Logs statistics for job initiations, job queuing, and job terminations.
Statistics	Logs statistics significant in evaluating system performance.
System	Logs all noteworthy system activity.

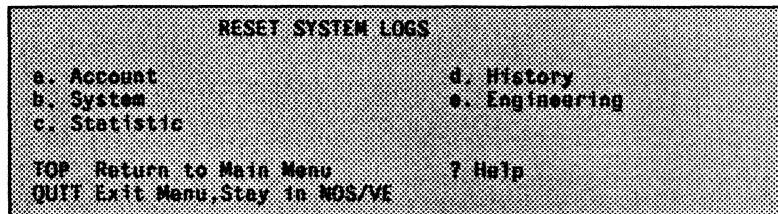
System logs are maintained until you explicitly reset them. When you reset a log, the contents of the log are moved from the log to a permanent file.

To prevent system logs from getting too large, reset them periodically. The engineering log, however, generally remains small unless your system has frequent hardware problems.

Resetting System Logs

To reset a log, do the following:

1. From the NOS/VE Operator Main menu select Reset System Logs . The system displays the following:



2. Select the log you want to reset. The system requests a name for the file to receive the log. If you do not specify a name (that is, just press <Return>), the system assigns the following name to the file:

`$SYSTEM.log__date`

For example, if you choose the History Log on December 31, 1987 and do not specify a file name, the system places the log on file:

`$SYSTEM. HISTORY __1987365`

Managing User Validations

The users of a CYBER 930 are organized into families. Control Data created family NVE for you and designated user NVE as the family administrator.

As the family administrator, you must create user names, passwords, and charge numbers for anyone you want to run jobs on the system. You also control other user attributes and privileges. For example, you can validate a user for interactive jobs only.

Using the Family Administrator Menu

The family administrator menu guides you in creating, deleting, or changing user validations. You can do many of these tasks by specifying only two or three values. For example, you can create a system user by specifying the user name only. The system assigns default values for all other attributes.

Displaying the Family Administrator Menu

To display the family administrator menu, do the following:

1. Log in at a terminal (not the console) that can use screen mode.
2. Enter `SELECT_FAMILY_ADMIN_MENU` (SELFAM) The following menu is displayed:

```
NOS/VE Family Administrator Menu                               Menu 1 of 1
                                Version 1.0
                        Copyright Control Data Corp., 1987
a - How to use the Family Administrator Menu
b - Create a User
c - Change a User
d - Delete a User
e - Display a User
f - Generate Source
g - Display/Change Current Defaults
LOGOUT  Log out from NOS/VE.
QUIT    Exit this menu, stay in NOS/VE.

Enter a menu selection and press RETURN.
```


Chapter 4

Special Procedures

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Analyzing Mainframe Errors

The CYBER 930 is highly fault-tolerant, which means that individual system elements can fail without causing a system failure. The console records such noncritical problems in a log.

Using the error analysis procedure, you can display information on failing logic modules from the problem log. You may be asked to give this information over the telephone or to record it for later use by maintenance personnel.

Use this procedure only at the request of authorized maintenance personnel.

1. To initiate Analyze Last Error, start at the Console Main menu and press the following keys:

M to select Maintenance

A to select Analyze Last Error

The system runs the analysis program.

If the system finds an error, it displays a diagram of numbered vertical slots, which represent the mainframe's logic modules. One or more of these slots includes a name (MEMORY 1, for example) and a priority number.

2. For the slots with names, record the slot number, the slot name, and the priority number.
3. Press <Esc> twice to return to the Console Main menu.

Changing Remote Communications Parameters

A modem converts digital information into a form suitable for telephone transmission and converts telephone signals back into digital form for use by the computer. Communications parameters determine how the modem converts and transmits data when linking to a remote console.

Default Values

The console software initializes all modems with a default set of parameters.

If you change the baud rate or the parity at one end of a remote link, you must make the same change at the other end.

The modem initialization and dial strings are modem dependent and therefore need not match between modems. To accomodate local conditions, these strings on your system may differ from the default strings shown below.

Default Communications Parameters

```
COMMUNICATIONS PARAMETERS

Modem Initialization String =
ATE0Q1B1S0=1S2=127&E1&Q1

Modem Dial String = ATDP

Baudrate      =    2400

Parity        =    none
```


Changing Parameters

NOTE

You cannot change communications parameters while a remote link is in place.

To change communications parameters, do the following:

1. If you are at the local console, go to the Console Main menu and press <R> to select Remote Operations . The Remote Operations menu appears.

If you are at a remote console, start at the Remote Console Options menu, which appears as soon as you turn on the console.

2. Press the following keys:

A or C to select Answer Incoming Calls or Call Remote Console

C to select Communications Parameters

3. Select the parameter you want to change.

If you choose the modem initialization or dial string, the current string appears at the bottom of the screen.

If you choose baud rate or parity, the system displays a list of valid values.

Changing Remote Communications Parameters

4. Make the desired change as follows:

Parameter Type	Your Action
Modem initialization string	Edit the old string. Use <←>, <→>, and <Backspace> to move the cursor. <Return> completes the change and recalls the communications parameters menu.
Modem dial string	Edit the old string. Use <←>, <→>, and <Backspace> to move the cursor. <Return> completes the change and recalls the communications parameters menu.
Baud rate	Select the new baud rate from the list. The communications parameters menu reappears with the changed parameter.
Parity	Select the new parity setting from the list. The communications parameters menu reappears with the changed parameter.

5. Press <Esc> <Esc> to return to the Remote Operations menu.

Changing the Date and Time

You can change the system time and date under three different circumstances:

- While NOS/VE is running.
- Before deadstarting.
- When adjusting for daylight saving time.

The time usually needs changing only when you switch between standard and daylight saving time. The `CHANGE__TIME__ZONE` command instructs the system to adjust for this type of time change.

A long-life battery backs up the primary power supply for the system clock so that mainframe power loss does not affect the time or date settings.

Changing the Date and Time while NOS/VE Is Running

- To change the date while NOS/VE is running, use the `CHANGE__DATE (CHAD)` command. For example, to change the date to July 4, 1999, enter:

`CHAD Y = 1999 M = 7 D = 4`

- To change the time while NOS/VE is running, use the `CHANGE__TIME (CHAT)` command. For example, to change the time to 15:45:30, enter this command:

`CHAT H = 15 M = 45 S = 30`

Changing the Date and Time before Deadstarting

To change the date or time before deadstarting, enter console mode then do as follows:

1. From the Console Main menu press:

M to select Maintenance

S to select Set System Clock

Changing the Date and Time

The Set System Clock screen appears. There is an input field for each element of the date and time. The cursor is positioned at the first date field. The valid entries for each field are shown below:

Field	Description	Valid Values
Y	year	80 through 99
MM	month	01 through 12
DD	day	01 through 28, 29, 30, or 31 (last day of current month)
HH	hour	00 through 23
MM	minute	00 through 59

3. Enter the date and time and press <Return>.

NOTE

Leading zeros are significant.

As you enter data, the cursor moves right. To move the cursor without entering data, use <→> and <←>.

If your entries are valid, the system accepts the changes and displays the Maintenance Main menu.

If your entries are invalid, the system displays:

(15) Invalid entry, please try again:

The range of valid entries for the offending field, such as: YEAR (80 - 99), is also displayed. The cursor is at the first character of the invalid entry.

Adjusting for Daylight Saving Time

Use the `CHANGE__TIME__ZONE` command to change to and from daylight savings time. This command requires the parameters `TIME__ZONE` and `ADJUST__DATE__TIME`.

`TIME__ZONE` or `TZ`

This parameter defines your time relative to universal time coordinated (UTC), formerly Greenwich mean time (GMT). Values for `TIME__ZONE` have the format:

`hours__from__GMT:minutes__offset.Daylight__Saving__time`

where:

- `Hours__from__GMT` is the number of hours after (+) or before (-) UTC at your location.
- `Minutes__offset` is the number of minutes after (+) or before (-) the hour. This value is usually 0, unless time zones in your area differ by 30 minutes. Values can be -30, 0, or 30. The default is 0.
- `Daylight__Saving__time` specifies a change to standard time (value = FALSE) or daylight saving time (value = TRUE).

`ADJUST__DATE__TIME` or `ADT`

This parameter specifies whether or not to change the system clock. A value of TRUE changes the system clock; a value of FALSE leaves the system clock unchanged.

For example, to change the system clock for the beginning of daylight saving time in Minneapolis, Minnesota, enter the following command:

```
CHATZ TIME__ZONE = -6.TRUE  
ADJUST__DATE__TIME = TRUE
```

Changing Operator-Access Passwords

The three operator-access passwords (local access, remote access, and telephone list passwords) have an initial value of NULL. To change any operator-access password, do the following:

1. From the Console Main menu press:

M to select Maintenance

U to select Utilities

M to select Modify Console Security Options

The system prompts you to insert the key disk in the floppy disk drive.

2. Insert the key disk, close the latch, and press <Return>.

The system displays the Modify Console Security Options menu.

3. Press <M> to select Modify Passwords.

The system displays the Modify Passwords menu.

4. Press <L> or <R> or <T> to select the password you want to change.

The system requests the old password.

5. Type the old password and press <Return>. (The old password is NULL if it has not been changed from the factory default.)

The system requests the new password.

6. Type the new password (maximum of 16 characters) and press <Return>.

The system prompts you to enter the new password again.

7. Type the new password again and press **<Return>**.

If you typed identical new passwords both times and if you entered the correct old password, the system accepts the change.

If the two entries are not identical, the system keeps the old password and displays an error message.

The Modify Passwords menu appears.

8. Press **<Esc> <Esc>** to exit the Modify Passwords menu; or press **<L>** or **<R>** or **<T>** to change another password.

Changing Remote Security

Access to the system from a remote console is protected by several security parameters. You can change three of these security parameters:

Allow 'Answer Calls from Remote Console'

If this parameter is set to NO, you cannot set up the local console to answer incoming calls: if you try to select Answer Incoming Calls from the Remote Operations menu, the system displays:

This option has been disabled - see Remote Security Options

Ignore 'Disable' Options when Answering Calls

If this parameter is set to NO, the system overrides normal callback by the local console. A remote console can then establish a link without the local console having to call back. For the callback override to work:

- the remote console's callback number must have the prefix *disable*
- the corresponding number on the local call-in list must have the prefix *disable*
- the system must be on and connected
- the remote access password must not be NULL

Allow 'Manual Telephone Connection'

If this parameter is set to YES, you can connect to any remote console without using the telephone lists: the system's security features are bypassed. Use manual telephone connections only in special circumstances and for sites where security requirements are low.

To change parameters:

1. From the Console Main menu, press the following:

M to select Maintenance

U to select Utilities

M to select Modify Console Security Options

The system prompts you to insert the key disk in the floppy disk drive.

2. Insert the key disk in the floppy drive and close the latch. Press <Return>.

The system displays the Modify Console Security Options menu.

3. Press <R> to select Remote Security Options.
The system displays the three options that you can change.

To toggle parameter values between YES and NO, press <Return>.

To save the screen settings, press <F3>.

To exit the display without saving any changes, press <Esc>.

Assigning Critical Peripherals

Use this procedure to assign peripheral devices that are used for:

- Installing and updating CIP components
- Starting NOS/VE
- Performing deadstart dumps

NOTE

Do not change these parameters unless instructed to do so. If you are unsure about a change, ask an analyst or a customer representative for help.

1. To change peripheral device assignments, start at the Console Main menu and press the following:

M to select Maintenance

U to select Utilities

C to select Configure Critical Peripherals

A list of critical devices is displayed.

2. Move the cursor to the parameter you want to change:

<Tab> moves the cursor to the next field.

<Shift-Tab> or <Backspace> move the cursor to the previous field.

<→> moves the cursor from character to character

3. Enter the new value.

Valid entries are shown at the bottom of the screen.
Other restrictions on entries depend on the configuration of your system, as shown in the following table:

Parameter	Valid Entries
CH	For 9836 disk subsystems: 01,03,05 (6-channel system) 01,03,05,21,23,25 (12-channel system) The numbers shown are octal. For tapes on ICI channels: 00,02,04 (6-channel system) 00,02,04,20,22,24 (12-channel system) The numbers shown are octal. For tapes on IPI channels: 03,05 (6-channel system) 03,05,21,23,25 (12-channel system) The numbers shown are octal.
DIAGNOSTIC DEADSTART PP	00 - 04 (5-PP system) 00 - 04, 20-24 (10-PP system) The numbers shown are octal.

4. To save the changes and exit the procedure, press <F3>.

To cancel the changes and exit the procedure, press <Esc>.

Editing Telephone Lists

When you link a remote console and a local console, the console software dials the telephone numbers. Both consoles store four sets of telephone numbers for this purpose:

Local Call-out List

The local call-out list stores telephone numbers of all remote sites that can be called from the local console. You access this list from the Call Remote Console menu.

Local Call-in List

The local call-in list stores telephone numbers of sites that are authorized to call the local console and operate the system. You access this list from the Answer Incoming Calls menu.

Remote Call-out List

The remote call-out list stores telephone numbers of all local sites that you can call from the remote console. You access this list from the Call System Console menu.

Direct Line Telephone Number

The remote console stores the direct line telephone number of its modem. You access this number from the Call System Console menu.

The local console uses its call-in list to validate incoming calls. When a remote console calls to establish a link, the remote console's telephone number is passed to the local console. The local console then disconnects, verifies that the remote console's number is on the local call-in list, and calls the remote console back to establish the link.

Punctuation Marks in Telephone Numbers

Telephone numbers must contain:

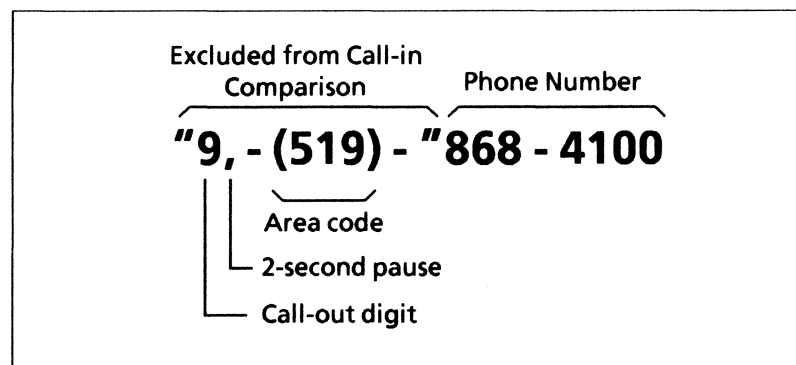
- 40 characters or less
- Numerals only
- The following punctuation marks only: quotation marks, commas, left and right parentheses, dashes, hyphens, and spaces.

The console ignores all valid punctuation marks, except the comma, which becomes a 2-second pause in the dialing sequence. Use a comma to follow a local call-out digit.

Quotation marks have special meaning. Numbers enclosed in quotation marks are not used in the comparison of call-in numbers. This allows you to include prefixes (such as area codes) and local call-out digits in call-in numbers but not have them used in the remote call-in comparison.

Unless you have reasons for doing otherwise, use only the basic telephone number (excluding prefixes) for a call-in number.

Typical Punctuation Marks in a Telephone Number



Changing Telephone Lists

Using the console menu system, you can change, add, or delete numbers in the call-out and call-in telephone lists. To change a list at the local console, mainframe power must be on. You cannot change telephone lists at the local or remote console if a remote link is active.

To edit your telephone lists, follow these steps:

1. If you are at the local console, start at the Console Main menu and press <R> to select Remote Operations . The Remote Operations menu appears.

If you are at a remote console, start at the Remote Console Options menu, which appears when you switch on the console.

2. To select the call-in list at the local console, press <A> then <E>.

To select the call-out list at either console, press <C> then <E>.

To select the direct-line telephone number at the remote console, press <C> then <T>.

3. If the system prompts for the telephone list password, type the password and press <Return>.

If you supplied the correct password, the telephone list appears on the screen.

If you enter an invalid password, the system again prompts for the password. You can reenter the password three times. After that, the console returns to the starting menu.

4. Press a number key to select the telephone number you want to change.

An edit window opens containing the selected telephone number.

5. Enter the new telephone number. Use <←>, <→>, and <Backspace> to move the cursor within the field.

The edit window, as it first appears, is wide enough for only 15 characters. As you type, the window expands to accommodate up to 40 characters.

6. Press <Return>. The edit window disappears and the new number appears on the telephone list. If you want to edit additional numbers, go back to step 4.
7. At the local console, press <Esc> <Esc> to return to the Console Main menu.

At the remote console press <Esc> to return to the Remote Console Options menu.

Managing a Remote Link

If your system has the remote option, you can link a remote console to the local console. Either the local or the remote console can initiate the link. Either console can control the mainframe while the link is active.

If remote maintenance is required, the local console usually initiates the link. If you want to run your system in unattended mode, you can initiate a call from a remote console.

Managing a remote link involves these four tasks:

- Preparing for a link
- Initiating or receiving a call
- Conducting a remote session
- Terminating a remote link

Preparing for a Link

Before you can establish a link, ensure the following:

- Both consoles and both modems are on.
- Each console has the proper call-out and call-in telephone numbers.

Local Console

If the local console is the receiving console, its call-in list must have the number of the remote console.

If the local console is the calling console, its call-out list must have the telephone number of the remote console.

Remote console

If the remote console is the receiving console, there are no requirements for its telephone list.

If the remote console is the calling console, its call-out list must have the telephone number of the local console and the Telephone Number of This Console must have the number of the remote modem.

Receiving or Initiating a Call

The receiving console must be in auto-answer mode.

Placing the Console in Auto-answer Mode

To place your console in auto-answer mode, make sure your modem is switched on, and then:

- If your console is a local console, from the Console Main menu press <R>, then <A>, then <S>. After a few seconds, the system displays:

SET TO ANSWER CALLS IN SUCCESSION

- If your console is a remote console, from the Remote Console Options menu, press <A>, then <S>. The system displays the Answer Incoming Calls menu.
- For both consoles, a window opens near the bottom of the screen with the message:

Initializing Modem

followed by:

waiting for call

- The console is now in auto-answer mode and remains so until it receives a call or until you abort it by pressing <Esc>.

You can switch to system mode (<Alt-F2>) without terminating auto-answer mode.

When the calling console completes the remote link, the Terminate Data Link menu appears.

Initiating a Call

Initiate a call to the other console as follows:

1. If your console is a local console, from the Console Main menu press <R>, then <C>, then <S>.

If your console is a remote console, from the Remote Console Options menu, press <C> then <S>.

The system displays the Call-out Telephone List.

2. Select the telephone number of the console you want to call.

While the telephone list remains on the screen, the console displays a series of messages to inform you of the progress of the call.

If you are calling from the remote site, the local console answers, disconnects, and recalls your console before completing the link.

3. When the link is complete, both consoles display a Remote Operations menu that has two items instead of the four items on the pre-link Remote Operations menu.

Conducting a Remote Session

While the two consoles are linked, only one controls the mainframe; that is, only one keyboard is effective. At the start of the session, the remote console is the controlling console.

The local operator can take control from the remote console by pressing <Esc>, and return control to the remote console by pressing <Alt-F4>.

You can perform the usual console operations from the controlling console, including system mode operations.

The following aspects of remote sessions are noteworthy:

- Keystrokes from the remote console are processed by the local console.
- Displays at both consoles are identical.
- <Alt-F3> opens a window for passing messages between the two consoles. Keystrokes entered at the effective keyboard appear in the message window at both consoles.

Terminating a Remote Link

To terminate the link, select Terminate Remote Connection from the Remote Operations menu.

To abort the link, press <Alt-F5>.

Running Mainframe Diagnostics

Use this procedure only at the request of authorized maintenance personnel. This procedure starts an extensive set of diagnostic tests that run on the mainframe for up to an hour. The tests detect mainframe hardware failures and verify the system disk.

If the diagnostic tests find hardware problems, the console displays numbers that identify hardware elements for maintenance personnel. You may be asked to quote these numbers over the telephone or to record them for later use by maintenance personnel.

Follow these steps to start the diagnostic tests:

1. Shut down NOS/VE (refer to chapter 3).
2. From the Console Main menu, press

 M to select Maintenance

 R to select Run Diagnostics.

The console displays a warning that NOS/VE should not be running.

3. Press <Return> to continue. The diagnostics start and the console displays a list of diagnostics, each with a status field.

If a diagnostic runs successfully, its status field shows in turn SELECTED, INIT __DECS, RUNNING, and COMPLETE.

If a diagnostic fails, its status changes to FAILED. The console then displays a diagram of numbered vertical slots, which represent the mainframe logic modules. One or more of these slots has a name (for example, MEMORY 1) and a priority number.

4. Record the name of the failing test.
5. For the slots with names, record the slot number, the slot name, and the priority number.
6. Press <Esc> twice to return to the Console Main menu.

Running Tape Diagnostics

The procedures in this section are for the 9639 Tape Subsystem or the 9730 Tape/Disk Subsystem. If you have a different tape subsystem, refer to its operator's manual. The hardware manuals section of appendix A lists the operator's manuals for other Control Data tape drives used with the 930 system.

When a tape unit malfunctions, its control panel often registers a fault code. Check the chart of fault codes under the hinged lid of the tape unit. Correct the fault, if you can. If you cannot, run a diagnostic test.

The test described in this section runs for approximately 15 minutes if you use a 27-cm (10.5-in) tape reel. While running the test, record fault codes or other problem signs:

1. Make sure the tape unit power is on. (The LOGIC ON light is on).
2. Thread a scratch tape through the tape path and onto the takeup reel.
3. Press the TEST switch. The DIAGNOSTIC indicator lights; the display is 01.
4. Press the EXECUTE switch. The test starts with the display at 00. It increments to 11, then to 22, and so on through 99.

While this test is running, the FILE PROTECT, LOGIC ON, ONLINE, RESET, and DIAGNOSTICS indicators are lighted. The test continues for approximately 15 minutes doing various read and write exercises.

If the test runs to a successful completion, it ends with a rewind/unload operation and a 00 display.

If the test fails, it stops with a fault code in the display. Again, check the chart of fault codes to see if you can correct the problem. If not, call your Control Data service representative.

Setting System Options

Use this procedure to change parameters for NOS/VE operations. Be careful to set them correctly. An incorrect parameter can prevent the system from starting.

System Parameters You Can Change

You can change the parameters listed below to tailor your system. System analysts or maintenance personnel usually decide parameter values, but you could be asked to implement the changes.

System Parameters (Sheet 1 of 2)

Parameter	Description
PAGE SIZE IN KBYTES	Controls memory optimization
NUMBER OF PAGE TABLE ENTRIES IN A CM PAGE	Controls memory optimization
NOS/VE DEADSTART COMMAND FILE NUMBER (OCTAL)	Identifies the command file used by deadstart. All command files are numbered
NOS/VE DEADSTART COMMAND FILE LOCATION	Identifies where the deadstart file resides. It is usually CIP-DISK, but some procedures, such as system upgrades, require you to change this parameter to TAPE.
DEADSTART PAUSE FOR OPERATOR INPUT	Enables or disables a pause during deadstart so that you can enter special commands called system core commands.
DEADSTART PAUSE FOR OPERATOR INPUT	Enables or disables a pause during deadstart so that you can enter special commands called system core commands.
SET MAXIMUM CENTRAL MEMORY ADDRESS (MBYTES)	Allows you to logically reduce the size of central memory.
FORCE HARDWARE INITIALIZE	Enables or disables forced hardware initialization during deadstart.
INCLUDE DIAGNOSTIC TESTING	Enables or disables special diagnostics during deadstart.
PERMIT DEGRADES ON ERROR	Enables or disables special system modifications during deadstart to handle malfunctioning components.

System Parameters (Sheet 2 of 2)

Parameter	Description
ENABLE MDD UTILITY	Enables or disables the loading of the Monitor Display Driver (MDD) program, which is used by analysts or maintenance personnel.
LOAD MICROCODE	Enables or disables the loading of microcode (firmware) during deadstart. Microcode is usually loaded during deadstart only.
PERFORM CM RELOAD FROM DEADSTART DUMP TAPE	Enables or disables the reloading of central memory from a dump tape.
ENABLE AUTOMATIC POWER ON	Enables or disables the automatic power-on sequence.

How to Change System Parameters

Do the following to change system parameters listed on the previous page:

NOTE

Change these parameters only when instructed to. If you are unsure about a change, ask an analyst or customer representative for help.

1. From the Console Main menu, press:

- M to select Maintenance
- U to select Utilities
- S to select Select System Options

The first of two screens of parameters appears.

2. Move the cursor to the parameter you want to change.

<Tab> moves the cursor to the next parameter.

<Shift-Tab> moves the cursor to the previous parameter.

<PgUp> or <PgDn> changes pages.

3. To change a parameter, press <Return>.
4. To save the changes and exit the procedure, press <F3>.

To cancel the changes and exit the procedure, press <Esc>.

Doing a Deadstart That Pauses for Operator Input

You must do a continuation deadstart that pauses for operator input, if you want to:

- Change the system core commands for this deadstart.
- Change the physical or logical configuration for this deadstart.

Perform the following steps to do a continuation deadstart that pauses for operator input:

1. From the Console Main menu press:

M to select Maintenance

U to select Utilities

S to select Select System Options

2. Use the arrow keys to position the cursor on the line Deadstart Pause for Operator Input. Press <Return> to change the entry to YES.

The line NOS/VE Deadstart Command File Location should be CIP-DISK.

3. Press <F3> to save the system options.
4. Press <Esc> twice to return to the Console Main menu.
5. Press <I> to initiate NOS/VE. The Initiate NOS/VE menu appears.
6. Press <4> to continue the deadstart process.
7. When the Deadstart and System Device Configuration Selections display appears, press <Return>. After a series of messages, the following message appears:

Enter system core commands:

8. Enter system core commands, if necessary.

9. If you want to complete the deadstart without additional pauses, enter AUTO.

If you want to continue the deadstart process and pause so you can change the physical configuration and logical configuration enter GO.

10. If you entered GO, follow the directions given on the system console for changing the physical and logical configurations. In changing the physical and logical configurations, you use the utilities:

PHYSICAL__CONFIGURATION__UTILITY

EDIT__PHYSICAL__CONFIGURATION

LOGICAL__PHYSICAL__UTILITY

These utilities are documented in NOS/VE System Performance and Maintenance, Volume 2 [Control Data publication 60463925].

11. Wait for the following message to appear:

SYSTEM ACTIVATION COMPLETE

If you entered AUTO to end the system core commands, deadstart is complete and the system is available to users.

If you entered GO to end the system core commands, you must now enter:

ACTIVATE__PRODUCTION__ENVIRONMENT

This command makes the system available to all users. It is documented in NOS/VE Operations [Control Data publication 60463925].

Unless you change the parameter Deadstart Pause for Operator Input back to NO, the next continuation deadstart will also pause for operator input.

Use the procedure in the previous section, Setting System Options, to change the parameter.

Upgrading System Software

Several times a year Control Data releases new versions of its software. The new software is usually bundled in two packages:

- NOS/VE tapes and CDCNET software
- CYBER Initialization Package (CIP)

A Software Release Bulletin (SRB) accompanies both the new CIP and NOS/VE software. The SRB contains:

- Descriptions of the new features and their impact on your system.
- Detailed instructions on how to upgrade your current software.

Upgrading your system takes several hours. You must suspend system activities until you complete the process.

Chapter 5

In Case of Trouble

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When and How to Get Help

When you encounter a problem, first check this chapter for a solution. If the problem is related to an operator task, make sure you are using the proper instructions. Retry the task.

If the problem persists, gather the following information and call your Control Data service representative:

- The version and level of NOS/VE, which are displayed on the first line of the Critical Display Window.
- The level of console software, which is displayed in the lower left of any console mode help screen in the form Lxxxxx.
- The Batch Corrective Update (BCU) level.

Corrective code for NOS/VE between major releases is in the form of a BCU. The instructions that accompany the BCU tapes identify the BCU level.

- Any error messages in the Critical Display window.

Expand the window by pressing <Shift-F9> to ensure that you see all of the information. If you have a console printer, you can print the contents of the screen by pressing <Shift-PrintScreen>.

NOTE

This chapter assumes you are using the hardware and software provided by Control Data. Before calling your Control Data service representative, make sure that the problem is not caused by:

- Software that you have added
- Modifications that you have made to the released system

Saving the Contents of System Memories on Tape

After a system failure, save the contents of system memories on tape so that a customer service representative or other maintenance person can use this information to isolate the problem.

This procedure, known as a deadstart dump, captures other pertinent system data as well as the contents of system memories.

1. Insert a write ring in a tape and mount the tape on the tape unit that is defined as the deadstart dump tape unit. This is tape unit TAPE__A1, unless someone at your site has changed the factory-assigned name.

If this tape unit does not operate, assign another tape unit. Refer to Assigning Critical Peripherals in chapter 4.

2. From the Console Main menu, press <M> to select Maintenance. Press <P> to select Perform Deadstart Dump.

If NOS/VE is running or has been running since the last power-on of the mainframe, the system issues the warning:

CURRENT SELECTION MAY ABORT NOS/VE

3. Press <Y> and <Return> to continue or <N> and <Return> to abort the procedure.

If you proceed, the system displays a series of messages and then switches the console to system mode. The system then prompts you to verify four dump parameters, one at a time:

Dump tape density
Channel number
Equipment number
Unit number

Saving the Contents of System Memories on Tape

4. To change a parameter, type the new value and press <Return>.

If you do not want to change a parameter, simply press <Return> at each screen.

To view a previous parameter, press <Backspace>. After you verify the last parameter, the system proceeds with the dump.

If your mainframe has 64 megabytes of memory, the system requests a second tape. Mount the tape.

When the dump is completed, the system displays:

DUMP COMPLETE

5. Press <Alt-F2> to return to the Maintenance Main menu.

Problems with Reading or Writing a Tape

If a task or job involves the reading or writing of a tape, and that task or job fails, consider the following actions unless you can otherwise identify the problem:

- Clean the tape unit.
- Mount the tape on another tape unit.
- If the system is writing on the tape, for example during a file backup, use another tape.
- If the system is reading the tape, use another copy of the tape.
- Run tape diagnostics on the failing tape unit. Refer to Running Tape Diagnostics in chapter 4.

Sometimes, an Operator Action window appears on the screen and prompts you to recover or terminate the job. Refer to chapter 7, Operator Level Error Conditions and Recovery Procedures, of NOS/VE Operations, Usage [Control Data publication 60463914] for more about how to use these menus.

Keystroke and Switch Setting Errors

It is quite easy to toggle a switch accidentally or to make an incorrect keystroke. Sometimes the error is not immediately detected and the symptoms appear later. Here are three examples:

- The cursor is not visible.
- Each character you type appears twice.
- The system warns that it is not running on an 8-MHz clock.

The Cursor Is Not Visible

A blinking underline character indicates the position of the cursor. If the cursor is not on the screen, probably someone has accidentally pressed <Alt-2> instead of <Alt-F2>. Press <Alt-2> to bring the cursor back.

If the cursor is on the screen but not in a prominent spot, use <→>, <←> or <Tab> to locate it.

Each Character You Type Appears Twice

If typed characters appear twice on the screen, someone probably pressed <Alt-1> instead of <Alt-F1>. Press <Alt-1> to correct the problem.

The Console Is Not Running on an 8-MHz Clock

If the console clock switch is improperly set, the console displays a warning that it is not running on an 8-MHz clock. The clock switch is on the lower right front of the console. Ensure that the switch is in the depressed position.

A File Backup Job Fails

If a file backup job fails, you must examine the job log of that job. Use the printed copy of the job log, which is automatically sent to the printer.

If the job log shows that a tape error has occurred, try any of the following:

- Retry the backup using another tape unit.
- Clean the tape unit and retry the backup.
- Replace the last tape mounted with another tape and retry.

If the job log shows that a disk error has occurred, consider deleting the file that was being copied.

If you choose to delete it, enter the command:

DELF F = file

Use file path, as shown in the job log, for the value file.

After deleting the file, retry the backup.

A File Restore Job Fails

If an attempt to restore files fails, examine the job log of that job. Use the printed copy of the job log, which is automatically sent to the printer. If the job log shows that a tape error has occurred, consider one of the following:

- Try to restore the files using another tape unit.
- Clean the tape unit and retry the backup.
- Use an alternate set of backup tapes for restoring the file.

The System Stops

If the system does not respond to entries in the Main Operator window, and the time shown in the Critical Display window is not advancing, do the following:

1. If the top line of the screen and the Critical Display window contain messages, record them before they are erased by a system restart. These messages might help when analyzing the source of the problem.

Only the last two lines of the Critical Display window are visible. To expand it, move the cursor to that window and press <Shift-F9>.

2. If messages are on the screen, consult the section How to Respond to Console Messages for guidance.
3. If the problem persists, press <Ctrl-Alt-Del> to restart console software.
4. If the problem still persists, save the contents of system memories on tape.
5. Restart NOS/VE by selecting Initiate NOS/VE from the Console Main menu.

Printer Problems

The OPERATE__STATION (OPES) utility controls operation of the system printers. The system calls this utility as needed when you use the NOS/VE operator menus to do operator tasks.

Printer-related messages do not appear in the Operator Action window. Instead they are sent to the terminal (or console) that is controlling the print station through OPES. If you suspect problems with a printer, you can monitor it by logging into OPES.

Under OPES, you can monitor a print station from the console or from an interactive terminal. If you use the console, the messages appear in the Main Operator window. The display area there is limited, and you may not want to reserve this window for monitoring printers.

To use OPES, do the following procedure. If you want more information about calling OPES directly, refer to CDCNET Batch Device User Guide [Control Data Publication 60463863].

1. If you are at a terminal, log in under the user name NVE.
2. Enter the following command:

OPES SN = station

The system displays the following prompt for an OPES subcommand:

OPS/

3. To get the status of all printers at the specified station, enter:

DISBDS DN = PRINTERS DO =

The system displays a brief description and the status of each of the printers, including any outstanding messages pertinent to that printer.

4. Enter QUIT to end your OPES session.

How to Respond to Console Messages

The messages described here are those you encounter while the console is in system mode. Messages for console mode are described in chapters 3 and 4, together with their related tasks. Online help (Alt-F2) also deals with console mode messages.

In system mode, the system displays messages in the following places on the screen:

- Main Operator Window
- Operator Action Window
- System Message Line
- Critical Display Window

Main Operator Window

Messages in the Main Operator Window are mostly error messages resulting from an incorrect entry. Reenter the correct command to proceed.

Operator Action Window

Operator action requests from user jobs appear in the Operator Action Display Window. For such messages, refer to Sending Messages to Users in chapter 3.

System Message Line and Critical Display Window

When a system problem merits your attention, a short description of the problem is displayed on the top line of the screen, and a detailed description usually appears in the Critical Display Window. This type of message informs you of:

- system errors
- mass storage device errors
- magnetic tape unit errors.

Refer to the NOS/VE System Performance and Maintenance manual, Volume 2 [Control Data Publication 60463925] for information that will help you solve these problems.

Appendix A

Related Manuals

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Related Manuals

This manual does *not* describe all of the features of the following:

- CYBER 930 hardware
- Network Operating System/Virtual Environment (NOS/VE)
- Control Data Distributed Communications Network (CDCNET).

For more information on these components refer to the following manuals:

Manual Title	Publication Number	Online Manuals ¹
NOS/VE Operations Usage	60463914	
Introduction to NOS/VE Tutorial	60464012	
NOS/VE System Performance and Maintenance Volume 1: Performance Usage	60463915	
NOS/VE System Performance and Maintenance Volume 2: Maintenance Usage	60463925	
CDCNET Network Operations	60461520	
CDCNET Batch Device User Guide	60463863	CDCNET_ BATCH

1. This column lists the title of the online version of the manual and indicates whether the examples in the printed manuals are in the online manual, Examples.

All CYBER 930, NOS/VE, and related hardware manuals are listed in the following tables. If your site has installed the online manuals, you can find an abstract for each NOS/VE manual in the online System Information manual. To access this manual enter:

explain

Ordering Printed Manuals

To order a printed Control Data manual, send an order form to:

Control Data Corporation
Literature and Distribution Services
308 North Dale Street
St. Paul, Minnesota 55103

To obtain an order form or to get more information about ordering Control Data manuals, write to the above address or call (612) 292-2101. If you are a Control Data employee, call (612) 292-2100.

Accessing Online Manuals

To access the online version of a printed manual, log in to NOS/VE and enter the online title on the EXPLAIN command, as shown in the following tables.

For example, to see the SCL Quick Reference online manual, enter:

```
explain manual = scl
```

The examples in some printed manuals are also in the online manual, Examples. To access this manual, enter:

```
explain manual = examples
```

When EXAMPLES is listed in the Online Manuals column in the table below, that manual is represented in the online manual, Examples.

CYBER 930 Manuals

Manual Title	Publication Number	Online Manuals
CYBER 930 Computer System Safe Use and Operation of the CYBER 930	60469007	
CYBER 930 Computer System Customer Planning Guide	60469520	
CYBER 930 Computer System Maintenance Guide	60469540	
CYBER 930 Computer System Guide to Operations	60469560	

NOS/VE Site Manuals

Manual Title	Publication Number	Online Manuals¹
CYBER Initialization Package (CIP) Reference Manual	60457180	
MAINTAIN__MAIL ² Usage		MAIM
NOS/VE Accounting Analysis System Usage	60463923	
NOS/VE Operations Usage	60463914	
NOS/VE System Performance and Maintenance Volume 1: Performance Usage	60463915	
NOS/VE System Performance and Maintenance Volume 2: Maintenance Usage	60463925	
NOS/VE Network Management Usage	60463916	
NOS/VE LCN Configuration and Network Management Usage	60463917	
NOS/VE Desktop/VE Host Utilities Usage	60463918	
NOS/VE User Validation Usage	60464513	

1. This column lists the title of the online version of the manual and indicates whether the examples in the printed manuals are in the online manual, Examples.

2. To access this manual, you must be the administrator for MAIL/VE.

Related Manuals

NOS/VE User Manuals

Manual Title	Publication Number	Online Manuals ¹
EDIT__CATALOG Usage		EDIT__CATALOG
EDIT__CATALOG for NOS/VE Summary	60487719	
Introduction to NOS/VE Tutorial	60464012	
NOS/VE Advanced File Management Tutorial	60486412	AFM__T
NOS/VE Advanced File Management Usage	60486413	AFM
NOS/VE Advanced File Management Summary	60486419	
NOS/VE Commands and Functions Quick Reference	60464018	SCL
NOS/VE File Editor Tutorial/Usage	60464015	EXAMPLES
NOS/VE Object Code Management Usage	60464413	
NOS/VE Screen Formatting Usage	60488813	EXAMPLES
NOS/VE Source Code Management Usage	60464313	EXAMPLES
NOS/VE System Usage	60464014	EXAMPLES
NOS/VE Terminal Definition Usage	60464016	
Screen Design Facility for NOS/VE Usage	60488613	SDF

1. This column lists the title of the online version of the manual and indicates whether the examples in the printed manuals are in the online manual, Examples.

CYBIL Manuals

Manual Title	Publication Number	Online Manuals¹
CYBIL for NOS/VE File Management Usage	60464114	EXAMPLES
CYBIL for NOS/VE Keyed-File and Sort/Merge Interfaces Usage	60464117	EXAMPLES
CYBIL for NOS/VE Language Definition Usage	60464113	CYBIL and EXAMPLES
CYBIL for NOS/VE Sequential and Byte-Addressable Files Usage	60464116	EXAMPLES
CYBIL for NOS/VE System Interface Usage	60464115	EXAMPLES

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Related Manuals

FORTRAN Manuals

Manual Title	Publication Number	Online Manuals ¹
FORTRAN Version 1 for NOS/VE Language Definition Usage	60485913	EXAMPLES
FORTRAN Version 1 for NOS/VE Quick Reference		FORTRAN
FORTRAN Version 2 for NOS/VE Language Definition Usage	60487113	EXAMPLES
FORTRAN Version 2 for NOS/VE Quick Reference		VFORTRAN
FORTRAN for NOS/VE Tutorial	60485912	FORTRAN_T
FORTRAN for NOS/VE Topics for FORTRAN Programmers Usage	60485916	
FORTRAN for NOS/VE Summary	60485919	

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COBOL Manuals

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COBOL for NOS/VE Summary	60486019	
COBOL for NOS/VE Tutorial	60486012	COBOL__T
COBOL for NOS/VE Usage	60486013	COBOL and EXAMPLES

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Other Compiler Manuals

Manual Title	Publication Number	Online Manuals ¹
APL for NOS/VE File Utilities Usage	60485814	
APL for NOS/VE Language Definition Usage	60485813	
BASIC for NOS/VE Summary Card	60486319	
BASIC for NOS/VE Usage	60486313	BASIC
LISP for NOS/VE Usage	60486213	
Pascal for NOS/VE Summary Card	60485619	
Pascal for NOS/VE Usage	60485613	PASCAL
Prolog for NOS/VE Quick Reference	60486718	PROLOG
Prolog for NOS/VE Usage	60486713	

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Related Manuals

VX/VE Site Manuals

Manual Title	Publication Number	Online Manuals ¹
C/VE for NOS/VE Quick Reference		C
C/VE for NOS/VE Usage	60469830	
DWB/VX Introduction and User Reference Tutorial/Usage	60469890	
DWB/VX Macro Packages Guide Usage	60469910	
DWB/VX Preprocessors Guide Usage	60469920	
DWB/VX Text Formatters Guide Usage	60469900	
VX/VE Administrator Guide and Reference Tutorial/Usage	60469770	
VX/VE An Introduction for UNIX Users Tutorial/Usage	60469980	
VX/VE Programmer Guide Tutorial	60469790	
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VX/VE User Reference Usage	60469810	

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Data Management Site Manuals

Manual Title	Publication Number	Online Manuals¹
DM Command Procedures Reference Manual	60487905	
DM Concepts and Facilities Manual	60487900	
DM Error Message Summary for DM on CDC NOS/VE	60487906	
DM Fundamental Query and Manipulation Manual	60487903	
DM Report Writer Reference Manual	60487904	
DM System Administrator's Reference Manual for DM on CDC NOS/VE	60487902	
DM Utilities Reference Manual for DM on CDC NOS/VE	60487901	

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Related Manuals

Information Management Manuals

Manual Title	Publication Number	Online Manuals ¹
IM/Control for NOS/VE Quick Reference	L60488918	CONTROL
IM/Control for NOS/VE Usage	60488913	
IM/Quick for NOS/VE Tutorial	60485712	
IM/Quick for NOS/VE Summary	60485714	
IM/Quick for NOS/VE Usage		QUICK

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CDCNET Manuals

Manual Title	Publication Number	Online Manuals ¹
CDCNET Access Guide	60463830	CDCNET_ACCESS
CDCNET Batch Device User Guide	60463863	CDCNET_BATCH
CDCNET Commands Quick Reference	60000020	
CDCNET Configuration and Site Administration Guide	60461550	
CDCNET Diagnostic Messages	60461600	
CDCNET Conceptual Overview	60461540	
CDCNET Network Analysis	60461590	
CDCNET Network Configuration Utility		NETCU
CDCNET Network Configuration Utility Summary Card	60000269	
CDCNET Network Operations	60461520	
CDCNET Network Performance Analyzer	60461510	
CDCNET Product Descriptions	60460590	
CDCNET Systems Programmer's Reference Manual Volume 1 Base System Software	60462410	
CDCNET Systems Programmer's Reference Manual Volume 2 Network Management Entities and Layer Interfaces	60462420	
CDCNET Systems Programmer's Reference Manual Volume 3 Network Protocols	60462430	
CDCNET Terminal Interface Usage	60463850	

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Related Manuals

Miscellaneous Manuals

Manual Title	Publication Number	Online Manuals ¹
Applications Directory	60455370	
CONTEXT Summary Card	60488419	
CYBER Online Text for NOS/VE Usage	60488403	CONTEXT
Control Data CONNECT User's Guide	60462560	
Debug for NOS/VE Quick Reference		DEBUG
Debug for NOS/VE Usage	60488213	
Desktop/VE for Macintosh Tutorial	60464502	
Desktop/VE for Macintosh Usage	60464503	
Diagnostic Messages for NOS/VE Usage	60464613	MESSAGES
MAIL/VE Summary Card	60464519	
MAIL/VE Usage		MAIL__VE
NOS/VE Examples Usage		EXAMPLES
NOS/VE System Information		NOS__VE
Programming Environment for NOS/VE Usage		ENVIRONMENT
Programming Environment for NOS/VE Summary	60486819	
Remote Host Facility Usage	60460620	

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Hardware Manuals

Manual Title	Publication Number	Online Manuals
HPA/VE Reference	60461930	

Migration Manuals

Manual Title	Publication Number	Online Manuals ¹
Migration from IBM to NOS/VE Tutorial/Usage	60489507	MIGRATE__IBM
Migration from NOS to NOS/VE Standalone Tutorial/Usage	60489504	
Migration from NOS/BE to NOS/VE Standalone Tutorial/Usage	60489506	
Migration from VAX/VMS to NOS/VE Tutorial/Usage	60489508	MIGRATE__VAX

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Appendix B

Commonly Used Function Keys

Commonly Used Function Keys

Key	Function
<Alt-F1>	Calls help to the screen.
<Alt-F2>	Switches the console between system mode and console mode.
<Alt-F3>	Opens a window for passing messages between the local console and a remote console.
<Alt-F4>	Switches control of the mainframe from the local console to a remote console.
<Alt-F5>	Aborts a link between a remote console and the local console.
<Backspace>	Moves the cursor back one space.
<Ctrl-Alt-Del>	Restarts console software.
<Ctrl-End>	Deletes current character and all characters to its right.
<Ctrl-Home>	Refreshes the screen.
<Ctrl- ←>	Reverses the effect of <F9>, <Shift-F9>, and <F10>, or resets a pageable display to page 1.
<Esc>	Aborts the current console-mode function and recalls the prior menu.
<F9>	Expands the window by six lines.
<F10>	Shrinks the window to its minimum length. Applicable only to the Critical Display Window and the Operator Action Window.
<PgDn>	Moves the display forward a page.
<PgUp>	Moves the display backward a page.
<Shift-F9>	Expands the window to its maximum length.
<Shift-PrintScrn>	Prints the contents of the screen on the console's printer.
<Tab>	Moves the cursor to the last line of window or, if already there, to last line of next window.
arrow keys	Move the cursor.
< + > (on keypad)	Takes the current line to the top of the window.
< - > (on keypad)	Takes the current line to the bottom of the window if the display is long enough.

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